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LONG-TERM COMMODITY PRICE FORECASTING—1850 TO 1930. I

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THIS study seeks to take stock of the work of those who at one time or another during the last seventy-five years attempted to forecast the future of the commodity price level. Even in these days when the reputations of prophets are at depression lows, such a study is easily justified. Irrespective of the measure of their success or failure, the predictions constitute an interesting chapter in the search for a better understanding of price behavior and determination, and it goes without saying that there is need for all the light we can get on every phase of the problem of the price level. The forecasting aspect of prices is important not only because of its bearing on matters of business practice and public policy, but also because of its close relationship to the other branches of economic prediction. In this connection, commodity prices have been more than a little neglected if one may judge from the scant chapter or two devoted to the price level in the texts on business forecasting. More immediately to the point, there has been no systematic appraisal of the price predictions which can be regarded as remotely comparable with Pro-

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fessor Garfield V. Cox's[2] appraisal of American business forecasts, or even with Alfred Cowles's[3] recent study of the stock-market forecasts.

Price predictions, like general business forecasts, are very difficult to evaluate satisfactorily. Since actual developments have usually proved them right in some respects and wrong in others, it is not possible to say precisely to what extent, if at all, the net effect of the forecasts was helpful. Sometimes the predictions were intentionally made vague and ambiguous, but even when they were not, much still depends upon what interpretation is placed upon certain key words and phrases, upon whether or not the general tone of the forecast as well as the letter of the words is taken into account, and upon the extent to which it is assumed that the forecaster expected his public to remember and to consider still valid certain statements made in earlier market letters. Then there is always the further difficulty of deciding just how much weight in each situation a fair appraisal should give the various elements of the forecast; for a given error in estimating the amplitude, duration, or timing of an anticipated trend may easily be more misleading under certain conditions than under others.

Since our interest is quite as much in the theorizing underlying the predictions as in their degree of success, it has been elected to make a case study of some one hundred and fifty price forecasts rather than to subject still larger numbers to less intensive analysis. A fixed procedure was accordingly observed: First, our own general impression of each forecast, together with direct quotations where feasible, was set down; this was followed by a short criticism and a definite rating; these in turn were followed by a summary of the reasons offered by each forecaster for his attitude. These "reasons" supplied the raw material for an analysis of the assumptions and theorizing underlying the various forecasts. Such a method of rating the predictions frankly grants that all appraisals depend ultimately upon the good judgment of the ap-

[2] *An Appraisal of American Business Forecasts* (2d ed. rev.; Chicago: University of Chicago Press, 1930).

[3] "Can Stock Market Forecasters Forecast?" *Econometrica*, July, 1933, pp. 309–24.

praiser, but it at least provides a definite record of the reasons why each individual rating was assigned. At the same time it yields a valuable by-product in the form of a detailed description of a large collection of noteworthy forecasts, many of which already are all but lost to students of prices. Since space does not permit their reproduction here, we must be content to present the conclusions toward which the study points.

Partly in the interest of simplicity and partly in order that the appraisals should not give the impression of being more exact and impersonal than intended, the essay type of rating rather than a mathematical "point system" is used. These ratings range from "very good" to "very poor" with "fair" characterizing those forecasts which seemed to be about half right and half wrong, or so indefinite that it is an open question whether they were slightly helpful or slightly misleading. Since there have been no perfect predictions, our "very good" rating applies to those which proved to be reasonably accurate in every essential respect; that is, to forecasts which were stated definitely and with confidence and at the same time foretold accurately the direction, time, and duration of the next movement of the commodity price averages. The "very poor" rating is reserved for the predictions which foretold very nearly the opposite of what actually occurred.

The indexes used in checking the results of the forecasts are the wholesale-price index numbers. The chief reason for this is that no other suitable measure of the price level, such as Carl Snyder's index of general prices, was in existence when most of the predictions were made. The forecasters themselves were consequently thinking in terms of wholesale prices and were always ready to accept credit for a correct prediction if Dun's, Bradstreet's, or the Bureau of Labor Statistics index moved in accordance with their forecasts of the future of "commodities." The wholesale price level, at any rate, is probably a very important one from the point of view of business men, for it is more sensitive than the indexes of the so-called general price level and the indexes of prices at retail. Although it is granted that some more inclusive price level than the one measured by our wholesale indexes needs to be considered when matters of monetary theory and public monetary

policy are being considered, it seems highly probable that the forecasters will be able to deal successfully with any index in which we are interested, once they have demonstrated that they can predict dependably the behavior of our leading wholesale-price series. In evaluating the forecasts, we have tried to make allowance for the differences shown by the various leading wholesale-price index numbers in the few instances when these differences seemed to be particularly important.

The forecasts will be considered under the headings of long-term and short-term predictions. The former group includes those that apply to a period of time measured in years, usually not less than five and commonly much more. The latter group, which includes those predictions that apply to a period of a few months, usually six months or less, will be examined in the second instalment of this article. We turn now to the forecasts which deal with the longer-range future.

Inasmuch as there existed no systematic price forecasting prior to the World War, one is forced to fall back on the widely scattered predictions made by economists and others both here and abroad as early as 1852 in order to get any clear notion as to what has been done in the way of foretelling the longer-term price trends. The fact that many of these applied to British prices should not detract from their interest, for wholesale prices in the leading markets of the world appear to have followed the same general trends throughout the period under consideration.

Our appraisal of the degree of success of this group of forecasts is based on the assumption that there have been four broad world-wide movements of wholesale prices since 1850. According to our best indexes the first of these was the rise of some 30 or 40 per cent, usually associated with the great gold discoveries, which began around 1850 and ended in this country in 1873.[4] The second was a long decline which began with the industrial crisis of 1873 and continued with but slight interruptions down to 1896. It amounted all told to about 60 per cent. The reasons usually given for this era of falling prices include the demonetization of silver

[4] Other factors often mentioned are the reaction from the hard times of 1846–50, speculation, the stimulus of the Crimean War, and later the Civil War.

by Germany, later the attempt of all the leading nations to establish the gold standard, reduced costs of production, improved processes, the superior management of business under the corporate form of organization, and, in general, the tendency of trade and production to outstrip the growth in money supply. The third broad swing of wholesale prices was a rise which began in 1896 and amounted to about 50 per cent by 1914 and to a further 150 per cent by 1920. The rise up to the war is generally accounted for by another great change in the production of gold.[5] Those who are disinclined to accept the monetary explanation of this rise in prices have emphasized such factors as the Dingley protective tariff (July, 1897), the trend toward monopoly, shortages in supplies of certain commodities due to bad seasons, the higher level of wages, and the various wars.[6]

The last broad movement of wholesale prices was the downswing which began in the summer of 1920. From 1922 to 1929 the general downward drift was scarcely perceptible in the United States on account of the rise of 1924–25, which offset the decline of 1923, and the rise of 1927–28, which offset most of the recession of 1925–26. In 1929, nevertheless, the level of wholesale prices in this country was 7 per cent under 1923; in Great Britain, 14 per cent; in Germany, 4 per cent; and in France, 10 per cent. Taking into account the drastic declines of 1920–21 and 1929–33, in addition to the general weakness of prices in the intervening years, it seems quite plain that the characteristic trend has been downward.[7]

There are various explanations of this price decline. Chief among them are the failure of the world's stock of gold money to

[5] The annual output of gold had been nearly stationary from 1860 to 1880. During the decade 1880–90 there had been some slight tendency to decline, but no marked change. Thereafter production rose rapidly; it doubled before the close of the nineteenth century and it quadrupled within five years thereafter. In 1900 the output was $250,000,000; in 1910, $455,000,000 (dollars of 23.22 grains). Production of gold was maintained at about the 1910 level until 1917.

[6] Notably, J. L. Laughlin, "Gold and Prices, 1890 to 1907," *Journal of Political Economy*, May, 1909, p. 271.

[7] Carl Snyder's index of the general price level shows a distinct upward trend from 1922 to 1929, but it also reached an all-time peak in 1920 and declined with wholesale prices from 1929 to 1933.

keep pace with the growth of physical production of commodities, the maldistribution of gold which tended to compel a restrictive credit policy and thus force down prices in certain countries, increased supplies of certain goods due to technological progress, and the maladjustments in production associated with the World War.[8]

In judging the long-range forecasts made during the years in question, one has to recognize the fact that it has never been possible to measure exactly the extent of the foregoing price movements or to settle conclusively the relative importance of the various probable causes. When one considers, further, that the forecasters did not pretend to be able to predict in detail the future of prices, one can readily understand that it would be futile to offer more than an approximate evaluation of this group of predictions. Our ratings are accordingly presented as tentative opinions for whatever they may be worth. More stress will be given the ratings, however, when we deal with the short-term predictions later on.

The upward trend, 1850 to 1873.—The following financial editors and economists predicted an important rise in commodity prices as a result of the Californian and Australian gold discoveries: The editor of the *Bankers' Magazine* (London),[9] July, 1852; the editor of the *London Times*,[10] July, 1852; Michel Chevalier,[11] French economist, 1854; and W. Stanley Jevons,[12] English economist, 1863. William Newmarch, co-author of Thomas Tooke's *History of Prices* (1857),[13] thought that a rise was not at all unlikely but was unwilling definitely to predict it. Professor Jevons predicted a long period of stable prices after the rise resulting from

[8] Inasmuch as the major portion of the price decline has occurred since 1929, a complete review of all the probable causes of the fall of prices would necessitate recounting all the supposed causes of the depression. Space does not permit this.

[9] "Effect on the Price of Commodities from the Increase in Gold," *Banker's Magazine* (London), July, 1852, pp. 246–47.

[10] Quoted in *Bankers' Magazine* (London), July, 1852, pp. 249–52.

[11] *On the Probable Fall of the Value of Gold* (Manchester, 1859).

[12] "A Serious Fall of the Value of Gold Ascertained," *Investigations in Currency and Finance* (London, 1884), pp. 49–74.

[13] *History of Prices* (London, 1857), VI, 227.

the gold discoveries had run its course. No examples of predictions of a reversal of the upward price trend have come to the writer's attention. The forecasts of the period were, on the whole, more helpful than otherwise. On the average, the foregoing predictions may conservatively be said to have deserved the rating "fair to good." The most typical fault of these early efforts was that they hinted strongly that the rise in prices might prove revolutionary; on the other hand, the minimum indicated increase was in no case much more than double the 44 per cent which one index of British prices indicates actually to have occurred.[14]

The underlying assumption in every case was that an increase in the supply of gold tends to raise the price level unless the demand for the metal increases as rapidly as the supply. The tendency was to overestimate the future output of gold and to underestimate the future demands upon this enlarged supply. None of the forecasters was able to foresee the tremendous drain of gold to India which J. L. Laughlin has estimated at almost half a billion dollars in the twenty-six years ending 1876.[15]

The downward trend, 1873 to 1896.—Mr. George M. Weston,[16] 1878; Sir Robert Giffen,[17] 1879; M. Leroy Beaulieu,[18] 1884; and Mr. M. G. Mulhall,[19] 1885, predicted a long-continued downward drift of commodity prices. These writers were all confident of their predictions, but they did not undertake to estimate in terms of percentages the extent of the decline. Professor W. Stanley Jevons,[20] 1879, took exception to the view that the decline was likely to continue over a long period of years, but he, too, was somewhat pessimistic and did not by any means predict a reversal of the trend of prices. No person as prominent as those just

[14] The index computed by John Park Young, *European Currency and Finance* (Commission of Gold and Silver Inquiry, United States Senate, 1925), pp. 436–50.

[15] *History of Bimetallism* (Chicago: University of Chicago Press, 1892), p. 145.

[16] "Solid Bottom in Prices," *Bankers' Magazine*, November, 1878, pp. 358–59.

[17] "On the Fall of Prices of Commodities in Recent Years," *Journal of the Statistical Society*, March, 1879, p. 54.

[18] "The Fall of Prices," *Nation*, May 8, 1884, pp. 401–2.

[19] *A History of Prices since 1850* (London: Longmans, Green & Co., 1885), p. 136.

[20] "On the Fall of Prices," *Journal of the Statistical Society*, March, 1879, p. 71.

mentioned seems to have gone on record predicting that the downward movement was but a temporary affair. If the five cases we have reviewed are a fair sample of the more serious attempts at forecasting, one may safely conclude that the forecasters enjoyed considerable success in the seventies and eighties. Our composite rating for the period is but slightly lower than "good."

The earliest four of these predictions were based upon an analysis of the supply of gold relative to the demands upon the prospective supply. The last two emphasized the effect of inventions and improvements in methods of production and transportation, stressing particularly the effect of these on the prices of such staples as grain and cotton.

The upward trend, 1896 to 1920.—The forecasts of this period proved to be less helpful than the earlier long-term predictions we have reviewed, partly, no doubt, because of the occurrence of the World War with its extraordinary effect upon the course of prices. The predictions characteristically were very indefinite as to the time element. Our average rating for the period is slightly better than "fair."

The forecasts may be summarized as follows: G. E. Roberts,[21] 1901, predicted only moderately higher prices; H. H. Brace,[22] 1910, expected a rapid rise for "some years" to be followed by a long period of stable prices; Irving Fisher,[23] 1912, forecast a rise averaging about 2 per cent per year for fifteen years and suggested that an upward trend was likely to be in evidence for at least a generation; W. J. Ashley,[24] 1912, predicted stable prices for a while but thought it very likely that a downward trend would be seen later on; and C. A. Conant[25] predicted stable prices indefinitely, at least so far as the new gold supplies were concerned.

[21] "The Influence of the New Supplies of Gold," *North American Review*, April, 1901, p. 262.

[22] *Gold Production and the Future of Prices* (New York: Bankers' Publishing Co., 1910), p. 145.

[23] "Will the Present Upward Trend of World Prices Continue?" *American Economic Review*, September, 1912 (reprint), pp. 20–28.

[24] *Gold and Prices* (London: Longmans, Green & Co., 1912), p. 32.

[25] "Effect of the New Gold upon Prices," *North American Review*, November, 1897, p. 552.

The forecasts of this period, according to our sample, were all based in some measure upon an analysis of the prospective demand for gold as compared with its growing supply. Professor Fisher made one of the most elaborate attempts to apply the quantity theory of money in predicting the future of prices that has ever found its way into print. Mr. Ashley was influenced a great deal by the belief that in the past the long-term trend of prices had been far more typically downward than upward.

The downward trend, 1920 to 1933.—Professor George F. Warren,[26] of Cornell, and Thomas Gibson,[27] the securities market analyst, were the two forecasters who insisted during the early twenties that prices during the next decade or so were not only headed toward lower levels but that they were likely to go at least as low as the 1913 level. Babson's Statistical Organization,[28] the Brookmire Economic Service,[29] Moody's Service,[30] the the Standard Statistics Service,[31] and Leonard P. Ayres[32] were all equally confident in 1925 or earlier that the general trend would be downward for a number of years, but they appear not to have considered seriously the probability of the pre-war price levels being reached within any ten or fifteen years. The Alexander Hamilton Institute[33] and Allyn Young[34] in 1923, and the National City Bank of New York[35] in 1922, expressed the belief that there was a definite possibility that there would be some tendency toward lower levels or at least that the probability of a trend downward was greater than the probability of an upward trend. Up until

[26] "The Agricultural Depression," *Quarterly Journal of Economics*, February, 1924, p. 213.

[27] *Weekly Forecast*, June 15, 1923, p. 3; *Annual Forecast*, January, 1924, p. 141.

[28] *Barometer Letters*, November 1, 1921; January 16, 1923.

[29] *Forecaster*, January 22, 1923; March 3, 1924.

[30] *Investment Letters*, February 16, 1922; May 27, 1924.

[31] *Daily Trade Service*, December 21, 1921; November 20, 1922.

[32] *The Future of Prices and Wages* (Cleveland: Cleveland Trust Company, 1921), pp. 5–7.

[33] *Monthly Letter*, September, 1923; *Business Conditions Weekly*, July 12, 1924.

[34] "The Trend of Prices," *American Economic Review (Supplement)*, March, 1923, pp. 6–7.

[35] *Economic Conditions*, October, 1922.

1926 the Harvard Economic Society[36] predicted that price fluctuations would take place about 50 per cent above the pre-war level, but in 1927 altered its view to the extent of predicting that a downward trend would come eventually if banks continued their policy of sterilizing the gold flowing into the country. Mr. J. O. Downey[37] in 1924 predicted a horizontal movement over the remainder of the decade and left the general impression that the factors tending toward higher levels would offset those tending in the opposite direction for a long time to come. Lionel D. Edie[38] in 1928 predicted a downward trend over the longer-term future, but argued that prices would not fall before 1935. But it remained for Mr. F. E. Richter,[39] in 1924, to insist that the forecasts of a downward trend were poorly founded and to imply quite definitely that the trend was more likely to be upward than downward.

It is true no forecaster was able to foresee very accurately the future course of the price level. The general expectation seems to have been that prices would fall farther than they did in each of the minor cycles, rather than that the bulk of the recession would occur in a long steep decline bringing scores of commodities to all-time lows, all within the span of a single business cycle. If it is correct to assume, however, that the public at large ordinarily takes for granted that the purchasing power of money will remain constant indefinitely, the superiority of the forecasters' views becomes evident.

If one assumes that the forecasts calling for a drastic price decline within ten years were the most helpful while those arguing that prices would remain steady, or at least would not decline, were slightly misleading or worse, it will have been noticed that the forecasting services were generally more helpful than the non-professional services. Table I shows how we have rated them.

In predicting this post-war decline in commodity prices, the

[36] *Weekly Letters*, June 10, 1926; February 14, 1925; January 23, 1927.

[37] "Future Price Trends," *Proceedings Academy Political Sciences*, November 24, 1924, pp. 246–58.

[38] *Money, Bank Credit, and Prices* (New York: Harpers, 1928), pp. 274–75.

[39] "The Bearing of Historical Analogy on Predictions," *Bell Telephone Quarterly*, July, 1924, pp. 165–74.

most popular argument was that a shortage or redistribution of gold would cause prices to decline, but there was little or no disposition to argue that the world credit structure was showing any particular signs of becoming badly strained or that the shortage of gold would lead to any spectacular liquidation of credit.

More consistently put to good account by the forecasters was the argument that the great productive capacity of the world, together with cost-reducing factors such as the increasing use of machinery, would force prices to lower levels.

TABLE I

RATINGS ASSIGNED PROFESSIONAL AND NON-PROFESSIONAL FORECASTERS, 1920–33

Rating	Number of Services	Bankers and Economists	Total
Very good	2	0	2
Good	4	1	5
Fair to good	1	3	4
Fair	1	0	1
Poor to fair	0	2	2
Poor	0	1	1
Very poor	0	0	0
Total	8	7	15

None of the forecasters foresaw or emphasized the political disturbances which are now often mentioned as having contributed to the world-wide recession in commodity prices. Nor did they succeed in drawing useful inferences from the outlook for the prices of particular commodities. Of all the forecasters whose predictions we have examined, the only one who made any attempt to use this approach was Mr. Richter, and he concluded that there was little probability of the prices of any of the basic raw materials falling sufficiently to affect the general price averages.

Entire period, 1852–1930.—Viewing the predictions as a whole, our study strongly indicates that the forecasters succeeded fairly well in foretelling the longer-range future of the commodity price level ever since 1852. The ratings we have assigned the predictions are summarized in Table II.

Our sample of predictions probably shows long-range price forecasting in its most favorable light, for in nearly all instances the forecasts were made after rather than before the beginning of the four great price movements. It has been impossible to include an equal number of cases dated shortly before the several changes in trend for the simple reason that the forecasts do not exist. Sufficient interest in the price level to draw out studied predictions evidently developed only in those periods when it became evident that something was happening to prices. Once a new movement started, people wanted to know whether or not it was going to be

TABLE II

SUMMARY OF RATINGS OF FORECASTS OF 1852–1930

Movement Forecast	Number Rated Higher than Fair	Number Rated Fair	Number Rated Lower than Fair
Upward trend, 1850–73	4	0	1
Downward trend, 1873–96	4	1	0
Upward trend, 1896–1920	3	1	2
Downward trend, 1920–33	11	1	3
Totals	22	3	6

a temporary affair, and the writers whose views were examined were attempting to answer this question. If one wishes to insist that the economists, bankers, and financial editors of the past ought to have predicted when they did not, it is, of course, one's privilege to pronounce them failures as forecasters. But no individual could fairly be charged with such a responsibility—at any rate, not up until the "rise" of the professional forecasting service a decade or so ago.

So far as we can discover, no new technique for deriving long-range price forecasts has been developed and tested. Mathematical formulas and forecasting charts have not been in evidence; on the contrary, the predictions have consisted for the most part merely of opinions based upon whatever information was available. In only an occasional instance does there seem to have been a conscious effort to apply the quantitative method of analysis. The best example of this is Professor Fisher's forecast of 1912, in

which each item in the equation of exchange was investigated to see how rapidly it had grown in the past and how rapidly it could be expected to grow in the future. The forecast did not prove to be especially accurate, and it seems likely that it would have proved still less correct had not the World War occurred. Another well-known instance in which statistics were in the foreground was Chevalier's forecast of seventy years ago. This, like Professor Fisher's effort, was not eminently successful. It is the writer's impression that these predictions were not fundamentally different from the others. They were based upon the same premises as the majority of the forecasts which made no attempt to estimate the future gold production and future demands upon gold in terms of dollars and cents. Estimates were none the more reliable because they were stated in concrete terms. Events such as the demonetization of silver by certain countries, the absorption of large supplies of the precious metals by India, technological developments, and wars were not foretold by statistical studies, no matter how elaborate these happened to be.

Two-thirds of the forecasts were based very largely upon the theory that changes in the supply of money or credit were likely to determine the future course of the general average of prices. Table III shows the ratings we have given the various predictions which were based to a great extent on such an assumption.

The twenty-two forecasts in this group were rated, on the average, better than neutral as may be seen from the fact that fifteen were considered more than half right as compared with four definitely more misleading than helpful. In view of the fact that "other things" usually do not "remain the same," it is not surprising that difficulties were encountered in applying the quantity theory to the problem of price forecasting. The task of foretelling the future of the gold supply was a problem in itself, but it was even more difficult to estimate the demands upon the increasing supply of money.

The experience of the forecasters working conspicuously from the side of "goods" is summarized briefly in Table IV. Out of a total of thirty-one predictions, only the eight listed in Table IV can be said to have placed as much or more emphasis upon the

prospective demand or supply of commodities as upon the analysis of the outlook for gold or credit. In all of these cases the nonmonetary approach was used in forecasting a continuation of the great downward swings of the price level. The central argument was that more efficient production methods and increasingly effective competition, foreign and domestic, were likely to drive prices

TABLE III

RATINGS ASSIGNED FORECASTS STRESSING MONETARY CONSIDERATIONS

Forecaster and Date	Rating
Bankers' Magazine (London), 1852	Fair to good
London Times, 1852	Fair to good
Chevalier, M., 1852	Fair to good
Jevons, W. S., 1863	Good
Jevons, W. S. (very long term), 1863	Poor
Weston, G. M., 1878	Good
Giffen, Robert, 1879	Good
Jevons, W. S., 1879	Fair
Conant, C. A., 1897	Poor to fair
Roberts, G. E., 1901	Fair to good
Ernest, Howard, 1907	Good
Brace, H. H., 1910	Poor to fair
Ashley, W. J., 1912	Fair
Fisher, Irving, 1912	Fair to good
Alexander Hamilton Institute, 1923	Fair to good
Brookmire Economic Service, 1923–24	Good
Harvard Economic Service, 1922–27	Fair
Standard Statistics Service, 1921–23	Good
Fisher, Irving, 1921	Fair to good
Young, Allyn A., 1923	Fair to good
Warren, George F., 1921–26	Very good
Edie, Lionel D., 1928	Poor to fair

much lower over a period of time. With the exception of Moody's Service and M. Leroy Beaulieu, the disposition was not to take issue with the quantity theory, but merely to emphasize the probable effect of more and cheaper goods as much or more than the monetary factors. As Table IV shows, these predictions were uniformly helpful.

The behavior of prices in the past seems to have been given surprisingly little consideration by the forecasters. The ratings

assigned the few predictions which gave special attention to price history as a possible clue to the future are tabulated in Table V.

In four of the six instances, the forecasters were able to profit somewhat from historical analogy in judging the future course of prices.[40] Past experience, for example, strongly indicated that prices would revert to their former levels following the World

TABLE IV

RATINGS OF FORECASTS STRESSING "GOODS" CONSIDERATIONS

Forecaster and Date	Rating
Beaulieu, Leroy, 1884	Good
Mulhall, M. G., 1885	Good
Babson's Organization, 1921–24	Good
Gibson, Thomas, 1923–27	Very good
Moody's Service, 1920–26	Good
Standard Service, 1921–27	Good
Ayres, L. P., 1921	Good
National City Bank, 1922	Fair to good

TABLE V

RATINGS OF FORECASTS STRESSING HISTORICAL ANALOGY

Forecaster and Date	Rating	Comment
Ashley, W. J., 1912	Fair	Analogy somewhat helpful
Babson's, 1921–24	Good	Analogy helpful
Moody's, 1920–26	Good	Analogy helpful
Ayres, L. P., 1921	Good	Analogy helpful
Harvard, 1922–27	Fair	Differences stressed
Richter, F. E., 1924	Poor	Differences stressed

War, but it was inconclusive so far as such important matters as the time element were concerned. Of the forecasters who made specific reference to history as having a bearing upon the long-range outlook we have noted only two whose predictions were not the better for it. Mr. Richter and the Harvard Service took the unfortunate position that conditions were so different in 1924 from what they had ever been that it was a serious fallacy to anticipate lower prices on the basis of historical analogies.

[40] The rating, however, does not necessarily measure the helpfulness of the analogy, for other considerations also entered into the final forecast.

The question cannot be answered conclusively as to whether or not there was more reason to advance the "goods" argument in the period 1873–96 and in the years following the World War than there was in the period from 1896 to 1914. In many respects it is true that the period from the close of the Civil War to near the close of the nineteenth century was one of development and expansion unparalleled in our history, for it is during this period that there occurred the gradual pushing of the frontier westward, the tapping of new resources, the opening up of vast areas of rich agricultural land, and the expansion in our transportation system.

TABLE VI

AVERAGE ANNUAL INCREASES IN VOLUME OF PHYSICAL PRODUCTION

Period	Years	Per Cent Increase
1849–73	24	4.6
1872–96	24	7.5
1896–1920	24	4.9
1896–1914	18	4.6
1919–29	10	2.7
1915–24	14	2.1

The Warren and Pearson index[41] of the volume of physical production of basic commodities bears out the notion that production in the United States increased more rapidly from 1873 to 1896 than in any of the other periods, even though Warren and Pearson themselves have insisted that the great price changes can be explained only from the side of gold. This index shows average annual increases about as tabulated in Table VI.

When one considers the production of the whole world, however, our best index indicates that the growth of the physical volume of production, except in war time, has been at an exceedingly even rate. Thus, according to Mr. Carl Snyder, the average annual increases for the periods in question were about as shown in Table VII.[42]

[41] *Prices* (New York: Wiley & Sons, 1933), pp. 44–45.

[42] These rates are based on Carl Snyder's figures for the world physical production (converted to the 1910–14 base by Warren and Pearson, *ibid.*, pp. 48–49) back

Since the decline in prices was international in scope, the failure of this index to show a striking rise from 1873 to 1896 tends to throw doubt on the theory that great technological advances in industry and agriculture were causes of particular significance in that era.

As to the period of rising prices from 1896 to 1914, it is noteworthy that toward the close of the nineteenth century two major developments, other than the new gold discoveries, marked the end of the earlier era of declining prices, namely, the gradual passing of the American frontier and the growth of restraints upon

TABLE VII

AVERAGE ANNUAL INCREASES IN WORLD-VOLUME OF PHYSICAL PRODUCTION

Period	Number of Years	Per Cent of Increase
1850–73	23	4.2
1873–96	23	4.2
1896–1913	17	4.0
1897–1920	23	2.4
1918–29	11	5.0
1920–29	9	3.7

price competition, particularly in manufacturing and transportation. The latter include such restraints as consolidations, monopolies, rate regulations by government, trade ethics, the branding of goods, and high protective tariffs.

Unlike Carl Snyder and Messrs. Warren and Pearson, Professor F. C. Mills[43] argues that the American economy has moved for-

to 1865. From 1850 to 1865 the data are Warren and Pearson's. By measuring from different dates it is possible to draw a different conclusion from Mr. Snyder's data. Thus, Rufus S. Tucker believes it to be significant that the index in question rose most rapidly from 1865 to 1880 and between 1921–29, both of which were periods of falling "general" prices. See "Gold and the General Price Level," *Review of Economic Statistics*, January 15, 1924, pp. 8–16.

[43] *Economic Tendencies in the United States* (New York: National Bureau of Economic Research, 1932), p. 310. Mr. Mills's figures for the annual rate of increase are not impressive at first glance. He puts the 1901–13 rate at 3.1 per cent and the 1922–29 rate at 3.8 per cent. The corresponding rates per head of population are 1.3 per cent and 2.4 per cent.

ward at a more rapid rate since the war. Measuring from 1901 to 1913 and from 1922 to 1929, he finds a higher post-war rate of growth of some 1.3 per cent per year in per capita physical production in the United States. He tells us that at the pre-war rate sixty-three years would have been required for a doubling of the individual's share in the annual output of the country, while at the rate of increase prevailing between 1922 and 1929, such a doubling would have required only twenty-nine years. The specific commodities in which we have had greatly increased supply and decreased costs since the war include such basic materials as wheat, sugar, coffee, copper, tin, petroleum, rubber, paper, silk, and rayon.

Despite Professor Mills's evidence, it is very doubtful that production as a whole increased since the war at an unusually rapid pace either in this country or in the world at large. We have already seen that the Warren and Pearson index shows a less than customary rate of increase since 1919, and that Carl Snyder's index of world-production of basic commodities shows little or no increase in the rate of growth, depending on the year from which we measure. Carl Snyder,[44] interpreting his own data, insists that he can find little evidence, either for the world or the United States, that the rate of increase in production materially differed from the normal rate of increase in the years immediately preceding the crash of 1929.

In accounting for the failures of the forecasters, it is, of course, easy to trace many of them to an inability to foresee the trends of such crucial variables as gold output, monetary policies, wars, technological development, and the growth of trade and commerce. A few examples will illustrate.

The *Bankers' Magazine*, the *London Times*, and Chevalier, from 1852 to 1854, were all correct in assuming that the gold discoveries would lead to a rise in prices, but they overestimated the future output of gold by as much as 50 per cent. Largely in consequence of this error, these writers predicted a greater rise in the price level than actually occurred. Others employing the same

[44] "Overproduction and Business Cycles," *Proceedings of the Academy of Political Sciences*, June, 1931, p. 358.

general theory of prices met with varying degrees of success in their forecasts. Giffen, 1879, underestimated both gold production and the growth of trade, and reached a passable conclusion. Conant, 1897, and Roberts, 1901, both estimated very accurately the future output of the gold mines but evidently overestimated the future rate of increase in the demand for gold. Their predictions were more than a little misleading.

On the other hand, it sometimes paid well to guess wrong! Thus the Standard Service in 1921, the Brookmire Service in 1923, and G. F. Warren in 1923, all predicted a long-term decline in the wholesale commodity price level on the assumption that this country would gradually lose its abnormal supply of gold. As a matter of fact the supply of monetary gold held by the United States continued to increase rather than decline up until 1932. Yet by that time prices had already reached very low levels as though in accordance with the foregoing predictions. To take a less recent example, Jevons' prediction of 1879 was the more accurate because of his use of the untenable argument that the prospective failure of the sun's activity to increase was likely to result in poor harvest, poor business, and lower prices.

Were it to be asked, however, if there is either a positive or negative correlation between the success attained by the forecasters and the quality of the reasoning used, no unqualified answer can safely be ventured. It has not been possible to classify each prediction according to the soundness of the logic underlying it, chiefly for the simple reason that various arguments were frequently offered in support of a given position, so that there is no way of telling just how much bearing each had on the final forecast. But there is also the further difficulty that it is not possible conclusively to identify and weigh the causes of the various price movements.

[*To be continued*]

STOCKHOLDERS' PARTICIPATIONS IN PROFITS. I[1]

W. H. S. STEVENS[2]

PRESUMABLY one of the most important considerations in the purchase of capital stock, at least to the average individual, is the share of the profits of the corporation which he expects to obtain. A most important classification or grouping of stockholders' rights, therefore, is one which measures the extent of their participation in this respect.

Stockholders' rights to share in the profits may be divided into two broad general groups: (1) fixed and (2) indeterminate. Stocks with fixed participations may be defined as those in which the stockholders' share of the profits may be expressed in terms of a specific annual amount or sum of money per share. In the case of no par value shares the fixed participation is so stated in terms; in par value shares where the participation is usually expressed in terms of a percentage of par, the fixed annual amount of the dividend may be calculated by multiplying the par value by the stated percentage dividend rate. An indeterminate participation, on the other hand, makes the stockholders' share of the profits dependent upon the amount of available earnings which the directors decide to distribute. It cannot, therefore, be expressed in terms of a definite annual amount.

In other words, fixed participating issues, for the purposes of this study, are defined to be those in which the profits distributable are limited to certain fixed sums calculable in dollars and/or

[1] This is the third of a series of studies of capital stock being made by the writer under the terms of a grant by the Social Science Research Council. The first of these studies, "Rights of Non-cumulative Preferred Shareholders," appeared in the *Columbia Law Review*, December, 1934. The second, "Discretion of Directors in the Distribution of Non-cumulative Preferred Dividends," was published in the *Georgetown Law Review*, January, 1936.

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cents per share;[3] indeterminate participating issues are those in which the participation is not so limited. According to this definition, therefore, fixed participations do not refer to the fixed ratios in which profits may be distributable between certain classes of shares, as one-third to one class and two-thirds to another, or ratably, or otherwise. In such cases the participation may be regarded as indeterminate, since the total amounts payable per share are conditioned by the total distributable profits.

FIXED PARTICIPATIONS IN PROFITS

Fixed initial preferred and common dividends.—The major characteristic of American stocks termed "preferred" is the fact that they are usually entitled to a certain fixed sum or fixed percentage of par before any dividends are paid on any junior issue.[4]

The following extract from the terms of the Johns-Manville preferred issue of 1926 illustrates the fixed participation in profits to which preferred shareholders, with some exceptions, are entitled: "The holders of the Preferred Stock shall be entitled to receive, when and as declared by the Board of Directors of the corporation, dividends . . . . at the rate of Seven per cent (7%) per annum."[5]

As these preferred dividends are fixed in amount, either as a definite amount of money or as a fixed percentage of par, they may

[3] As subsequently shown, most common stocks belong to the indeterminate-participation category and most preferreds to the fixed-participation classification.

[4] As used by the writer in these studies, a "preferred stock" has, after careful consideration, been defined as one entitled in terms to a participation in profits before some other class or classes of shares. It is fully appreciated that the definition does not conform to certain court decisions and legal theories, which cannot be discussed in this study. The fact remains, however, that this particular preference is the one which is common to more issues of stock in this country which are termed "preferred" than any other, as well as to numerous issues inaccurately, even ridiculously, termed "common." Here, as elsewhere, there are rare exceptions, as in the case of the old so-called preferred of the American International. This issue was entitled to one-fifth of any further distributions after dividends at the same rate as that paid on the common up to 7 per cent. (A-4802).

[5] New York Stock Exchange Listing Application A-7836. Hereafter these listing applications are referred to by serial letter and number only.

be designated as "initial fixed dividends" or "initial preferred dividends."[6]

Although preferred issues are, in the nature of the case, entitled to fixed initial dividends, a large proportion of such issues are strictly limited to such dividends. The common stocks of companies issuing the latter type of preferred rarely if ever carry any initial common dividends. In those companies where the preferred stockholders are entitled to participate in the profits of the corporation over and above their fixed initial preferred dividends, however, the common stockholders are sometimes entitled to fixed initial common dividends. For example, the agreement forming the Buffalo, Rochester, and Pittsburgh Railway Company provided:

> The preferred stock shall be entitled to a dividend of six per cent in each year but non-cumulative before any dividends shall be made in that year on the common stock.
>
> The common stock shall be entitled to a dividend of six per cent in each year but non-cumulative before any dividend in excess of six per cent shall be made in that year on the preferred stock.[7]

The initial fixed dividend on the preferred stock is, of course, the same as the amount of the preference given to the preferred shareholder. The fixed initial dividend on the common stock may or may not be the same as that on the preferred. Most commonly, perhaps, it is the same, as in the Buffalo, Rochester, and Pittsburgh issue just cited. But there are some issues in which it is either lower or higher. Examples of the former are the Metropolitan Edison Company, entitled to an initial dividend of $4.00 per share after $7.00 per share on the cumulative preferred (1922);[8] and Common B of the Bon Ami Company, entitled to $2.50 per share after $4.00 on so-called Common A (preferred) of 1926.[9]

[6] The writer is indebted to Professor A. A. Berle for the term "initial" which so aptly characterizes these dividends on preferred and common stocks, although the author of the expression apparently uses it only in connection with preferred issues (cf. Berle, *Studies in the Law of Corporation Finance* [1928], pp. 111 ff.).

[7] Cf. also issues made by the Pittsburgh Coal Co., The Pacific Coast Co. (second), Central Pacific R.R. Co., Chicago, Milwaukee and St. Paul, Electric Storage Battery Co., Lake Erie and Western R.R. Co., Minneapolis, St. Paul and Sault Ste Marie Rwy Co., Southern California Edison Co., Pierce Arrow (Class A).

[8] A-5847. [9] A-7320.

The Associated Merchants Company's first preferred was originally entitled to a dividend of 5 per cent only. In 1905 the stockholders voted to give this issue some additional participation along with the common, after 7 per cent had been paid on the latter.[10] Thereafter the initial preferred dividend rate was 5 per cent ($5.00) as compared with the initial common dividend rate of 7 per cent ($7.00).

In 1923 the Pittsburgh Utilities Corporation issued $10 par preferred entitled to 7 per cent, or 70 cents per share, after which the common was entitled to a fixed initial dividend of $1.00 per share.[11] Another corporation also providing for a higher fixed initial dividend on the common than on the preferred stock was the Rhode Island Perkins Horse Shoe Company, which was organized in 1891 or 1892. This company issued a common stock entitled to 10 per cent ($10) after 7 per cent ($7.00) on the preferred.[12]

In other cases, even though the preferred stock participates in profits in excess of its fixed initial dividends, the common stockholders are not entitled to any such fixed initial dividends. This was true, for example, of the prior lien stock of the Chicago and Alton[13] and also of Burns Brothers Class A common (preferred).[14]

Fixed participating dividends: (*a*) *on preferred stock.*—Fixed participations in profits are not, however, confined to fixed initial dividends, there being a considerable number of issues entitled to certain fixed participations in profits in addition to their fixed initial dividends. As preferred stocks are practically without exception entitled to a fixed initial dividend representing their preference in the distribution of profits, further fixed participations are in addition to such preferential dividends. Common stocks, as stated, may or may not be entitled to fixed initial dividends. In

[10] A-3073. [11] A-6095. [12] A-1328.

[13] The holders of such prior lien stock "shall also be entitled, in addition to said cumulative dividends at the rate of four per cent per annum, to receive additional dividends equal to the rate of dividends, if any, declared upon the Common Stock of the Consolidated Company as though such prior lien stock were part of the issue of Common Stock" ([1906] A-3264).

[14] Entitled to cumulative dividends at the rate of $8.00 per annum after which "further distributions whether in cash, property or stock, ... shall be distributed ratably to the holders of Class A Common Stock and Class B Common Stock, irrespective of class, share and share alike" ([1921] A-5569).

consequence any fixed participations of such stocks in profits may attach to these issues either in the absence of, or in addition to, any fixed initial dividends on such issues.

Additional fixed participations of preferred stocks may be payable (1) after the fixed initial dividends on the preferred, (2) after fixed initial dividends on both common and preferred, or (3) in participation with fixed participating dividends on the common.

1. An example of the first group is the Hershey Chocolate Corporation convertible preferred of 1927, which was entitled to $1.00 in each year in addition to its initial dividend of $4.00 annually before anything was paid on the common.[15]

2. Allis-Chalmers Company preferred of 1901 was entitled to an additional 1 per cent after 7 per cent on the preferred and 7 per cent on the common.[16] One per cent additional participation was also payable on the Standard Milling Company preferred of 1900, after 5 per cent on the preferred and 5 per cent on the common,[17] and the Seaboard Air Line Railway preferred of 1903 provided for 2 per cent additional on the preferred after fixed dividends of 4 per cent per annum on both preferred and common.[18]

3. In the third group the fixed participation of the preferred is payable in participation with the common instead of before common dividends or after fixed initial common dividends. In 1923 the Curtiss Aeroplane and Motor Company[19] authorized a 7 per cent preferred entitled, in addition to its fixed initial dividend, to a fixed participation along with the common up to $42 per share.[20]

Fixed participating dividends: (b) on common stock.—As has already been pointed out, fixed participations on common stocks may attach to such issues either in the absence of fixed initial common dividends or in addition to such initial dividends, as is gen-

[15] A-7747. [16] A-2709. [17] A-3967. [18] A-4090. [19] A-7697.

[20] Cf. also Botany Consolidated Mills, Inc., Class A (1924), entitled, after a $4.00 cumulative dividend, to share *pari passu* with the common in any further dividend declared until the Class A stock received an aggregate of $7.00 per share (A-6734).

In 1927 the United States Leather Co. authorized a Class A participating and convertible stock entitled, after fixed initial dividends of $4.00 per share, to participate with the common until the Class A received $2.00 additional (A-7623).

erally the case with additional fixed participations on the preferred.

In all those instances just cited where the preferred issue is entitled to fixed participations along with the common after fixed initial dividends on the preferred only, the common is also entitled to a corresponding fixed participation but not to any initial common dividend. For example, in the Curtiss Aeroplane issue cited above the common was entitled to a fixed participation of $42 per share along with the preferred, after the 7 per cent preferred dividend. Similarly, Botany Consolidated Mills common was entitled to a fixed participation of $3.00 along with the Class A stock after $4.00 initial dividend on the latter.

In other cases, however, the fixed participations on the common, like those on the preferred, attach to the common in addition to initial common dividends. In this event the additional fixed participation on the common may be payable either (1) in participation with or (2) after fixed participating dividends on the preferred. Thus, the Class A stock of the General Outdoor Advertising Company, Incorporated (1925), entitled to $4.00 cumulative dividends, participated with the common after an initial common dividend of $2.00 until Class A received a total of $6.00, including the $4.00 cumulative dividend. In other words, the Class A stock was entitled to initial fixed dividends of $4.00 and a fixed participation of $2.00, while the common was entitled to an initial dividend of $2.00 and a fixed participation of $2.00.[21] The Diamond Match Company cumulative participating preferred of 1930 was entitled to 6 per cent (par $25), after which the common stock was to receive $1.50 per share. The two stocks were then to participate share for share until the preferred had received 8 per cent ($2.00) altogether or 6 per cent initial ($1.50) and 2 per cent participating (50 cents) dividend.[22] The common stock similarly was entitled to a fixed initial dividend of $1.50 per share and to a fixed participation of $0.50 per share.

On the other hand, the Chicago and Northwestern preferred and common were each entitled to 7 per cent initial dividends,

[21] A-6779. [22] A-9657.

after which 3 per cent was payable on the preferred and then 3 per cent on the common (1864).

It has been indicated above, in connection with the discussion of fixed initial dividends, that such dividends on the preferred may be either equal to, or higher or lower than, those on the common. The same is equally true of fixed participations where both common and preferred are entitled to them. Although in all of the issues so far cited the amounts of the fixed participations on both stocks are equal, this is not always the case. For example, as early as 1890 the Pittsburgh, Cincinnati, Chicago, and St. Louis Railway authorized a 4 per cent non-cumulative preferred, after which 3 per cent was payable on the common. One per cent on the preferred was then payable, followed by 2 per cent on the common.[23] In this case, the fixed participation on the common exceeded that on the preferred. Attention is directed to the fact, however, that the sum of the fixed initial dividends and fixed participations on each of these stocks totaled the same, i.e., 5 per cent.

INDETERMINATE PARTICIPATION IN PROFITS

As previously stated, indeterminate participating issues are those in which the total participation to which the shareholders are entitled cannot be stated in terms of a fixed amount, as in the case of fixed participation, because the total amounts to be distributed are dependent upon the profits available. Such indeterminate rights to participate may be divided into three major groups or categories: (1) exclusive participations, (2) residual participations, and (3) partial residual participations.

Exclusive participation.—Where there is only one class of stock outstanding, all the profits earned, after necessary expenses and fixed charges, belong equitably to the holders of that stock and they alone are entitled to participate in them, although the amount of such profits which they receive is obviously dependent upon the dividends declared by the company. In these cases, therefore, this single class of shareholders is exclusively entitled to all of the profits which may be distributed; hence the term "exclusive participation."

[23] A-950.

Residual participation.—In numerous cases, however, corporations have issued both preferred and common stocks, and, as elsewhere pointed out, preference in the distribution of profits is the only characteristic which is common to practically all issues of stock termed "preferred." Almost without exception, therefore, preferred stocks are entitled to certain fixed initial dividends, representing the preferred-stock preference, and at times to fixed participating dividends in addition, either before or in participation with the common, as shown above. Where, as is usually the case, the preferred is entitled only to the fixed participations represented by these fixed initial and sometimes fixed participating dividends, the common stock is entitled to all the remaining profits, subject, of course, to the discretionary authority of the directors with regard to their distribution. If the common is also entitled to certain fixed initial and/or fixed participating dividends, it still remains true so long as the preferred is entitled only to fixed participations that the common shareholders are entitled to all residual profits after the fixed participations on both preferred and common have been paid. Any issue, therefore, entitled to all the residual profits after the payment of fixed participations may be termed "residual participating." For example, according to the certificate of incorporation of the General Railway Signal Company, filed in October, 1925, "the common stock shall be entitled to all net earnings and profits of the company in excess of the cumulative dividends . . . . on the preferred stock."[24] And in the Hershey Chocolate Corporation preferred the common was entitled to all the residual profits after the payment of initial dividends of $4.00, representing the preferred-stock preference and $1.00 per year participating dividend before dividends on the common.[25]

Upon its organization in 1902 the American Brake Shoe and Foundry Company issued preferred and common stock, the terms of which, with reference to the distribution of profits, were as follows:

[24] A-7655. "The preferred stock shall not be entitled to any dividend in excess of said seven percentum (7%) per annum . . . . ; but only the common stock shall be entitled to any further dividend . . . ." (Certificate of Incorporation, International Silver Co. [1898], A-7429).

[25] A-7747.

> The preferred stock . . . . shall entitle the holders thereof to receive out of the surplus or net profits, ... a cumulative dividend at the rate of seven per centum (7%) per annum. . . . . The holders of the common stock shall be entitled to receive as and when declared by the board of directors out of the surplus or net profits after the annual seven per centum (7%) cumulative dividend . . . . for all previous years shall have been declared and paid, a non-cumulative dividend at a rate in the discretion of the Board of directors, but never exceeding seven per centum (7%) per annum. After the holders of the common stock shall have received a dividend at the rate of seven per centum (7%) per annum in any year, the board of directors shall have power in its discretion to declare and pay, from the surplus or net profits, a further dividend for said year to the holders of the preferred stock.[26]

In this case the preferred instead of the common stock is the residual claimant to all surplus profits which may be declared after the payment of certain fixed initial dividends. This type of issue is so rare, however, as to constitute something of a curiosity, although one would be rash to assert that no other such issues have been made.

Partial residual participation.—As already shown above, there are several companies where neither the preferred nor common stockholders are entitled to all of the remaining or residual profits after the payment of prior fixed participations. Instead, these residual profits are divided between the preferred and common shareholders, each type of stockholder being entitled to share in them to whatever extent may be specified in the contract. In such cases both the preferred and the common-stock issues may be said to be entitled to partial residual participations.

Although perhaps rather obvious, it seems not to have been emphasized that in such companies common shareholders' rights to profits are essentially different from what they are in other cases. There is a fundamental distinction in the rights of common stock to all the profits where there is no preferred issue (exclusive participation) or to all the residue after the payment of certain prior fixed participations on the preferred (residual participation) and a situation where the common issue is entitled only to a portion of this residue of profits after fixed participations, the balance

[26] Charter, Art. IV.

going to the preferred stock.[27] An indeterminate participating preferred stock cannot be issued without creating also an indeterminate participating common issue, both of which are entitled to share in the residual profits according to the terms of the contract after the payment of all prior fixed participations. Necessarily the issuance of such a participating preferred destroys all those exclusive or residual participation rights which usually appertain to common stock.

Preferred shares belonging to this category are frequently termed "participating preferreds," the term in question indicating the rights of the preferred stock in such residual profits after the payment of the fixed initial and/or fixed participating dividends on the preferred, common or both. The term "participating common," however, is practically never heard.

The total amount of the participation to which indeterminate participating preferred stockholders are entitled consists of the sum of (1) the fixed initial dividend representing the preference of the preferred stock, (2) the fixed participating dividend, if any, on the preferred in addition to such fixed initial dividends, and (3) the share of the residual profits alloted to the preferred. In the case of indeterminate participating common stock, it is the sum of (1) any fixed initial and/or (2) fixed participating dividends payable to the common stockholders and (3) that portion of the residual profits provided for by the contract.

Class and per-share division of residual profits.—The distribution of any residual profits between preferred and common shareholders may be on either a share-for-share or a class basis. In the former case the profits distributed are divided in a certain fixed ratio per share as between the two or more classes entitled to participation; in the latter the division is one of total profits as between the two or more classes of shares irrespective of the number of shares of each class. If the ratio in which the total profits are

[27] The same statement holds good for any two classes of common stock entitled to divide all the profits, or all profits after the fixed participations on the preferred, unless the rights to these profits are equal share for share. Cf., for example, American International preferred (so-called) and common, entitled respectively to two-thirds and one-third of the profits distributed as dividends.

distributed between the common and preferred in the latter type of participation is the same as the ratio of the outstanding preferred shares to the common, it is immaterial which method is employed, because distribution by the one method will give the same results as distribution by the other. For example, assume a corporation with one thousand shares of common stock and one thousand shares of $5.00 preferred stock entitled to participate equally with the common share for share in any further distribution of profits after the payment of the preferred dividend. Assuming further that the corporation earns $10,000 in a year and that the directors determine to pay all these profits in dividends, the preferred will be entitled to a partial residual participation of $2.50 per share, as will also the common. If we assume instead that the residual profits of $5,000 are divided equally between the common and preferred, each as a class after the fixed initial preferred dividend, each class will receive $2,500 and the distribution will still aggregate $2.50 per share to both the common and the preferred.[28]

In comparatively rare instances the participations in the residual profits will be found to be established on a class basis. For example, Insuranshares Corporation of Delaware issued (1929) a Class A (preferred) stock and a Class B (common) stock entitled respectively to 85 per cent, as a class, and 15 per cent, as a class, of the residual profits after the payment of prior fixed participations.[29]

[28] The same situation holds for unequal as well as equal divisions of the residual profits between preferred and common so long as the number of shares of stock in each class outstanding are equal. Thus, with an equal number of shares of preferred and common outstanding, a class participation of one-third of the residual profits to the preferred and two-thirds to the common will produce the same dividends per share as a division of such profits in the ratio of two dollars per share on the common to one on the preferred.

[29] A-9021. A superdividend is payable pro rata to holders of preferred stock at the end of each fiscal year equivalent to one-half of the net profits of the company (Belgian National Railway, A-7814). After the payment of prior fixed participations, the preferred is to receive one-half of any additional dividends and the common is to receive the other half (Pittsburgh Utilities Corp. [1923], A-6095). Whenever all accrued dividends on the first preferred are paid or provided for, Board shall declare and cause to be paid ratably among the holders of first preferred, a participating dividend which shall, if no participating dividend has previously been de-

The somewhat rare use of the class participation arrangement is perhaps explained by the fact that such a provision will normally tend to favor the preferred shareholder. By reason of the two-thirds, three-quarters, or even higher proportion of votes or consents frequently required to increase the preferred stock, preferred shareholders are often in a position to defeat any such proposal. Increases in the number of the preferred shares, not only for new capital purposes but more particularly by way of stock dividends and capital stock split-ups, therefore, are much less likely than in the case of the common where only a majority vote is usually required, for such changes either of all the stock or sometimes only of the common.

On a share-for-share basis any of these increases in the volume of shares of common stock outstanding may reduce the per-share amount of the preferred-stockholders' participation in the residual profits, thus giving to the common stockholders, as a group, an increasing proportion of such residual profits declared to the two classes of stock. This will always be true of capital stock split-ups and of stock dividends paid in common in which the preferred does not participate. Where the increase in the common is for new capital, there may or may not be any dilution of the preferred participation, depending upon the productivity of that capital. On the other hand, where class participation is employed, increases in the common stock do not thus dilute the preferred-stockholders' per-share participation. And, as stated, the preferred stockholder commonly has the power to defeat any proposed dilution of the preferred participation through the authorization or issuance of new or additional preferred of equal or prior rank.

Assume, for example, a corporation with one thousand shares of $5.00 preferred and one thousand shares of common, and net earnings available for dividends of $20,000 in the year 1933, all of

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clared, be equal in aggregate amount to 10 per cent of the remaining profits available for distribution and which shall, if a participating dividend has previously been declared, be equal in aggregate amount to 10 per cent of such portion of the profits so available for distribution as has not been taken into account in ascertaining the amount of any participating dividend previously declared (Celanese Corp. of America [1923], A-9464).

which the directors decide to pay in dividends. Let us further assume that the residual profits after the fixed initial dividend of $5.00 per share on the preferred are to be divided equally, share for share, between the preferred and common. In this case it is apparent that there are $15,000 payable to the two thousand shares of preferred and common ratably, or $7.50 per share. Let it be assumed, however, that before the aforesaid payment is made the common stock is split by an issue of four new shares for one of the old, making the capitalization of the corporation one thousand shares of preferred and four thousand shares of common, a total of five thousand shares. In this event the total residual profits of $15,000 to be divided between the preferred and common will be distributed over the entire five thousand shares of capital stock, giving only $3.00 per share to the preferred instead of $7.50. Had the participation been on a class basis, the preferred would still have received $7,500, or $7.50 per share, while four thousand shares of common would have divided the same amount, or a dividend of only $1.875 per share instead of $3.00 on the share-for-share basis.

Where partial residual participations are set up on a share-for-share basis, therefore, those of the preferred stock can conceivably be manipulated almost to the point of extinction by increasing the number of shares of common stock. Only rarely are the preferred shareholders in a position to defeat such an increase of a junior issue and thus to prevent the dilution of their partial residual participations.

From the point of view of the common, the share-for-share plan of participation may appear to be more fair than the class basis. Many issues of preferred are callable in part, or may be reduced by the automatic operations of a so-called "sinking fund" or through market purchase and retirement. In such cases, the use of the class basis produces extremely large dividends per share of preferred after any considerable proportion of the issue has been retired. This point of view, however, is largely due to the increasing tendency since the nineties to regard preferred stock as generically different from common stock. This tendency in part is an outgrowth of the attempt to dress preferred stock in the trappings

of a bond in order to disguise its real character and impress purchasers with its merit. Callability, so-called sinking funds, and retirement provisions are merely individual features of the costuming, any or all of which can equally well be applied to one or more classes of common. Aside from this argument, the case for the share-for-share instead of the class basis of distribution would carry greater weight if the number of shares of common stock for participation purposes could be increased only on the basis of the sale or exchange of additional common for additional property and assets. In such a case any additional earnings might properly be attributed to the new capital resulting from the sale or exchange of the new shares of common. The preferred, on the other hand, having made no contribution to this increase, its dilution through the issuance of new common is compensated by its participation in the increased earnings. Under these conditions it can be argued that the share-for-share basis of distribution is more equitable in consequence than the class basis. The closest approach to this type of arrangement found by the writer is the Metropolitan Edison Company, where the cumulative preferred stock is entitled to partial residual participation share for share with the common. Here the terms of the contract provide:

> In the event that the number of shares of Common Stock outstanding shall be increased *other than by the issue thereof for value*, the number of dollars of dividend per share per annum then provided to be paid on the Common Stock, before any participation by the Preferred Stock, shall be diminished in the proportion that the number of shares of Common Stock added bears to the total number of shares of Common Stock outstanding after such additions shall have been made.[39]

If there is no such restriction as the foregoing on dilution by way of stock dividends and split-ups, the share-for-share basis is unfair to the preferred stockholders in the absence of voting controls which are strong enough to enable them to protect them-

[39] Italics mine. The same principles obviously apply to fixed participating dividends payable in participation with the common as well as to partial residual participations. See, e.g., Class A stock of the U.S. Leather Co. (A-7623), which contains a similar limitation on the dilution of its $2.00 fixed participation through stock dividends or split-ups of the common. Owing to the small size of the fixed participations usually allowed, however, the importance of preventing dilution in these cases is much less than in connection with partial residual participations.

selves. It is probably safe to say that any such voting control is very exceptional.[31]

Equal and unequal partial residual participation.—As in the case of fixed initial and fixed participating dividends, partial residual participations may be (1) equal as between the preferred and common or (2) the preferred may be higher than the common or (3) the common higher than the preferred.

The most common practice is to divide the distribution equally, share for share. For example, the prior lien stock of the Chicago and Alton (1864) provided that such stock should be entitled "to receive additional dividends equal to the rate of dividends, if any, declared upon the common stock, as though such prior lien stock were part of the issue of common stock."[32] There are, however, several exceptions to the general rule. One of the earlier issues resorting to an unequal distribution of residual profits is the Associated Merchants Company. In 1905 this company amended the dividend provisions of their first and second preferred stocks to provide that

> . . . . whenever the rate of distribution on the Common Stock shall exceed Seven per cent per annum then for each additional One per cent beyond Seven per cent, in the rate paid on its common stock, the Preferred Stocks shall be entitled at their next ensuing dividend date to additional dividends at the rate of one half of one per cent per annum beyond their present rates.[33]

The Moto Meter Company, Incorporated, Class A (preferred), was entitled to one-third and the Class B (common) to two-thirds, of the amount declared as additional dividends after the prior

[31] A somewhat less refined method of protecting preferred shareholders against the dilution of their partial residual participation is found in Gould Coupler participating Class A (preferred) shares (1925). This issue provides that in reckoning the partial residual participation between the preferred and common shareholders, the latter shall in no event be taken as exceeding 350,000 shares regardless of whether the actual number is greater than that or not. The obvious objection to this type of provision is that where large amounts of common are issued for additional capital and the capital is highly productive, the preferred tends to benefit at the expense of the common (A-6815). This issue, however, is a class and not a share-for-share participating issue. The reason for the limitation in question arises from the fact that the class participation is based in part upon the ratio of the number of preferred to the number of common shares.

[32] Charter. [33] A-3073.

fixed dividends.[34] Porto Rican American Tobacco Company, Class A (preferred), also gets one-third of the residual profits, participating ratably with Class B in the ratio of $1.00 on Class A to $2.00 on Class B.[35] In other cases the preferred gets the larger slice of the residual profit division. For example, Midland Steel Products participating preferred (8 per cent)[36] was entitled to 80 per cent of the further amount declared as dividends after the fixed initial dividends on both the preferred and the common. The holder of White Rock Mineral Springs second preferred of 1923 was entitled to five times the amount paid the common[37] and the owner of the United Carbon Company common was entitled to only one-quarter of the dividend on each share of preferred.[38]

Where the distribution of residual profits between the preferred and common shareholders is on a share-for-share and not a class basis, dilution of the preferred stockholders' interests in such profits may result through split-ups of common stock, as has already been pointed out. Where the rate of participation of the preferred shareholder is made substantially greater on a per-share basis than that of the common stockholder, there appears to be some recognition of the possibility of such dilution and consequently an attempt to minimize somewhat its effects. This may be illustrated by reverting to an earlier illustration of a corporation with one thousand shares of common, one thousand shares of $5.00 preferred, and $20,000 of earnings—all to be distributed. If the preferred is entitled to five times the rate on the common, as in the White Rock Mineral Springs issue cited above, the $15,000 residual profits would be divided at the rate of $12.50 per share on the preferred and $2.50 per share on the common. Additional common-stock issues equivalent to 400 per cent, or a five-for-one split-up, therefore, would be necessary in this case even to equalize the dividends of the two classes on a basis of $7,500 or $7.50 and $1.50 per share for the preferred and common, respectively. Where the rates are equal, there is, of course, no such compensating factor, and where the common carries a higher rate of partici-

[34] A-6801 (1925).
[35] A-7378 (1926).
[36] A-6291 (1923).
[37] A-6720 (1918).
[38] A-8764 (1925).

pation per share than the preferred, the effect is to accentuate instead of minimize the possibilities of the dilution of the preferred participation. If we reverse the illustration immediately preceding by assuming that the division of the residual profits on the common is five times the rate per share on the preferred, the common would be entitled to $12.50 and the preferred to $2.50 per share out of the residual profits of $15,000. If we then assume that the common shares are increased from only one thousand to two thousand shares, the $15,000 of residual profits would be divided $13,636 (plus) to the common and $1,363 (plus) to the preferred, or a rate of $6.81 (plus) on the two thousand common and only $1.36 (plus) on the preferred.

TYPES OF STOCK CLASSIFIED AS TO PARTICIPATION IN PROFITS

The total participations of the shareholders of a particular corporation in profits are, of course, determined by the contract between the shareholders and the corporation. This agreement may call for any one form of the fixed or indeterminate participations already described or any combination of them that may be determined to be desirable. The number of theoretically possible groupings is, therefore, large. However, the great bulk of both common and preferred issues fall into a comparatively few groupings, most of the other types being represented by a relatively few examples. Table I shows, according to the extent of their participation in total profits, a preliminary classification of issues of preferred stocks which have been listed on the New York Stock Exchange or recorded[39] in such listing applications for the fifty years from 1885 (when the first of such listing applications was published) through the year 1934, together with the terms of the corresponding common-stock issues of such companies.

The total number of issues in this grouping, which is 1,094, does not include quite all of those listed or recorded. The tabulations were originally prepared upon the basis of including only those issues for which data were available not only as to participations in profits but also as to participations in assets and voting control.

[39] Listing applications for common stocks sometimes give the terms of the preferred issues of the company in question which are not listed. No distinction in this study has been made between the two.

TABLE I

CLASSIFICATION OF PREFERRED AND COMMON STOCKS LISTED ON THE NEW YORK STOCK EXCHANGE OR RECORDED IN NEW YORK STOCK EXCHANGE LISTING APPLICATIONS, ACCORDING TO TOTAL PARTICIPATION IN PROFITS, 1885–1934

Type No.	Kind of Stock	Type of Participation	Division of Profits to Which Entitled	No. of Issues
1....	Preferred	Fixed	Initial dividends only	961
	Common	Residual	All profits after fixed initial dividends on preferred	.....
2....	Preferred	Fixed and residual	All profits after fixed initial dividends on preferred and common	1
	Common	Fixed	Initial dividends only	.....
3....	Preferred	Fixed	Fixed initial and fixed participating dividends before common dividends	7*
	Common	Residual	All profits after fixed initial and fixed participating dividends on preferred	.....
4....	Preferred	Fixed	Fixed initial dividends, and fixed participating dividends in participation with the common	3
	Common	Fixed and residual	All profits after fixed initial preferred dividend and fixed dividend in participation with preferred	.....
5....	Preferred	Fixed	Fixed initial dividends and after fixed initial common dividends to a fixed participating dividend before further common dividend	4
	Common	Fixed and residual	All profits after fixed initial dividends on preferred and common and fixed participating dividend on preferred	.....
6....	Preferred	Fixed	Fixed initial dividends and after initial common dividends to a fixed participating dividend in participation with the common	12
	Common	Fixed and residual	All profits after fixed initial dividends on preferred and common and fixed participating dividend in participation with the preferred	.....
7....	Common	Residual	All profits, no preferred outstanding	†
8....	Preferred	Fixed and partial residual	A part of the residual profits after fixed initial dividends on preferred	18
	Common	Partial residual	A part of the residual profits after fixed initial dividends on preferred	.....

* Includes one issue providing that ". . . . in any fiscal year in which any dividends are declared upon the Preferred Stock of either class, a dividend at the rate of one per cent upon the Seven per cent Preferred Stock shall be first declared and paid or set aside for payment upon the Seven per Cent Preferred Stock before any dividends shall be declared upon the Six per Cent Preferred Stock, but, after such declaration . . . . the two preferreds rank *pari passu*."

† This group includes all issues of common in companies which have no preferred stock.

TABLE I—*Continued*

Type No.	Kind of Stock	Type of Participation	Division of Profits to Which Entitled	No. of Issues
9....	Preferred	Fixed and partial residual	A part of the residual profits after fixed initial preferred and common dividends	83
	Common	Fixed and partial residual	A part of the residual profits after fixed initial preferred and common dividends	.....
10....	Preferred	Fixed and partial residual	A part of the residual profits after fixed initial and fixed participating dividends on both common and preferred	3
	Common	Fixed and partial residual	A part of the residual profits after fixed initial and fixed participating dividends on both common and preferred	.....
Unclassified‡..	.....	.....	.....	2
Total	.....	.....	.....	1,094

‡ One issue entitled to a dividend of 6 per cent before any dividends are paid on common unless earnings warrant a general dividend of 6 per cent or more on all stock, both preferred and common. One issue provides that the company may, out of net profits or surplus in excess of the then amount of junior stock reserves, with or without declaring dividends on Class B and common, declare additional dividends on Class A but the holders of Class A shall have no right to require declaration of such additional dividends.

When the listing data were inadequate in any of these three particulars, the effort was made to supplement it from charters and other documents and through correspondence with the companies—usually a time-consuming process. In several cases, particularly of the older issues, the data have not been obtainable up to the time this is written. These issues therefore have been excluded from the table. It is hoped, however, that it may be possible ultimately to raise this total by from ten to twenty issues; perhaps more. It is possible that one or two other types of participation may also be disclosed.[40]

[40] The writer is under great obligations to his capable research assistant, Mrs. Iva Randall, not only for the tabulations included in these studies but also for her long-continued and painstaking work in the preparation of the material.

[*To be continued*]

RELATIVE PRICE FLUCTUATIONS OF INDUSTRIAL STOCKS IN DIFFERENT PRICE GROUPS

LOUIS H. FRITZEMEIER[1]

INTRODUCTION

THIS study attempts to answer the three following questions in regard to the effect of price level of industrial stocks upon price fluctuations: (1) Does the price of low-price stocks tend to fluctuate relatively more or relatively less than the price of high-price stocks? (2) Does the price of low-price stocks tend to move up relatively more and down relatively less than the price of high-price stocks, or vice versa? (3) Is there any tendency for stocks in certain price ranges to lead or to lag the market?

METHOD OF STUDY

The method of study may be briefly stated as follows:

First, the industrial stocks listed on the New York Stock Exchange were classified into their respective price groups as of the first quoted price for each year from 1926 to 1935. The different price groups used throughout the study are shown in Table I.

TABLE I

THE DIFFERENT PRICE GROUPS USED IN THIS STUDY

Group	Price Range	Group	Price Range
1.....	Under $10	4.....	$50 to $75
2.....	$10 to $25	5.....	75 to 100
3.....	25 to 50	6.....	100 and over

Second, all stocks within each price group were ranked according to the number of shares traded in each respective year. Issues for which quotations were not available throughout the year and issues of companies making stock splits or declaring stock dividends during the respective year were eliminated.

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Third, the first ten stocks in each price group which were rated as "Ca," "Caa," "B," or "Ba" by Moody's Investors Service for the respective year were selected as the stocks to be used in constructing an aggregative weekly index number for each price group throughout the year.[2] Weekly closing quotations[3] were used to establish a price for each week. The closing quotations for the first week in each year were used as the base—100. The stocks rated by Moody's Investors Service as "Ca," "Caa," "B," or "Ba" were taken because it was believed that some attempt should be made to choose stocks in each group which were considered, at the time, to have equal possibilities of gain or loss, or stocks with somewhat equal financial risk or credit rating.[4] Stocks rated "C" were excluded because "discriminating purchasers would seldom consider a 'C' stock favorably."[5] The upper limit was set at "Ba" and all stocks rated "Baa" and over were excluded because they may be considered, according to Moody, as entering the investment class. Each group, therefore, contains stocks which were currently rated by Moody's Investors Service as "speculative issues."

Fourth, the weekly index numbers for each group of ten stocks, for each year from 1926 to 1935, were plotted on logarithmic scales.

Fifth, the annual curves of the different price indexes were analyzed to learn the relative price fluctuations of the different groups and to determine whether or not some of the price groups tended to move up relatively more during a "bullish" market than they tended to move down during a "bearish" market.

[2] Each annual index was extended to include the first Saturday in the next year. The calendar year was arbitrarily taken for the time basis.

[3] In case there were no sales during the week the last "bid" was taken as the price. Quotations were taken from the *Annalist*.

[4] In the years 1931–34 stocks rated above "Ba" were included in Group 6 because stocks selling at $100 or over were so scarce that the exclusion of all such stocks would have meant the inclusion of issues that were extremely inactive. A few stocks rated "Baa" were included in Group 5 in 1933 for the same reason. It was noted that in no case were there more than ten stocks eliminated because they failed to fall within the limits set for credit ratings.

[5] Moody's Investors Service, *Moody's Manual of Investments, Industrial Securities* (New York, 1932), p. x.

Sixth, after the different price indexes were studied for each individual year, the entire period was studied as a unit. This analysis was facilitated by graphically combining the annual index numbers of each price group into one index number covering the entire nine-year period. Tables of various profit and loss combinations were compiled to further this analysis.

Last, the different price indexes were examined to learn whether or not some of the price groups tended to lead and/or lag the market. Each of the different price indexes constructed in this study was compared with the Standard Statistics' Daily Price Index of Fifty Industrial Stocks. The 1926 indexes of the different price groups were compared with each other in a further study of "leads" and "lags."

DEFINITION OF TERMS

Throughout this article certain terms will be used in a technical sense. The terms will be quoted so that the reader will be reminded that they represent terminology which has been technically defined. The terms and definitions are as follows:

A "market fluctuation" is a change in the price index, up or down, equivalent to 1 per cent or more.

A "market movement" of a price index is: (1) a tendency of the price-index curve to move in one direction for four or more weeks, provided there is no contrary fluctuation within the period of more than the square root of the net points which the index number moves in the movement in question; (2) a movement of the price index for less than four weeks when the total points moved is more than "S" per cent, provided there is no contrary fluctuation within the period of more than the square root of the net points which the index number moves in the movement in question ("S" is the square root of the total number of points which the respective price index has moved, up and down, in the current year); or (3) a movement of a minimum of 5 per cent with no contrary movements, provided at least four of the six index numbers start such a movement within a two-week period.

A "lead" is a "market movement" of an index number which starts one or more weeks in advance of a "market movement" of the index number with which comparison is being made.

A "lag" is a "market movement" of an index number which starts one or more weeks later than a "market movement" of the index number with which comparison is being made.

A "false start" is a contrary movement of the index of more than 2 per cent which is not sufficient to amount to a "market movement."

A "contrary movement" is a "market movement" which is moving in the opposite direction to the index number with which it is being compared.

RELATIVE PRICE FLUCTUATIONS OF THE DIFFERENT PRICE GROUPS

ANALYSIS BY INDIVIDUAL YEARS

In 1926 (Fig. 1) the stocks opening between $10 and $25 (Group 2) reached the highest level. Group 1, consisting of stocks under $10, was second highest. Groups 5, 4, and 6, respectively, declined the most. An analysis of the total points moved[6] during the year shows the following order, according to the number of points fluctuated: Groups 2, 1, 4, 3, 6, and 5, respectively. We see here a tendency for the low-price stocks to fluctuate more than the high-price stocks. The tendency is not sufficiently prominent to make the relationship constant.[7] In regard to the groups making the greatest net gains during the year we find a mixed tendency. However, the two groups of high-price stocks closed the lowest, and Group 2 closed the highest.

Figure 2 presents the data for 1927. At the close of the year the groups from high to low were as follows: Groups 1, 3, 2, 4, 6, and 5. Group 1 was almost eighty points above Group 3, the next highest index. This year shows a very definite tendency for the low-price stocks to fluctuate more than the high-price stocks. The total points moved, up and down, during the year are in order of

[6] Throughout this article the term "points moved" refers to the movements of the respective index number and not to "dollars" of price change.

[7] By a "constant relationship" the author means a situation in which "price" tends to affect fluctuations in the same relative manner throughout the six different price groups. Assuming that low-price stocks fluctuate relatively more than high-price stocks the different price groups would rank as follows if the relationship is constant: Groups 1, 2, 3, 4, 5, and 6.

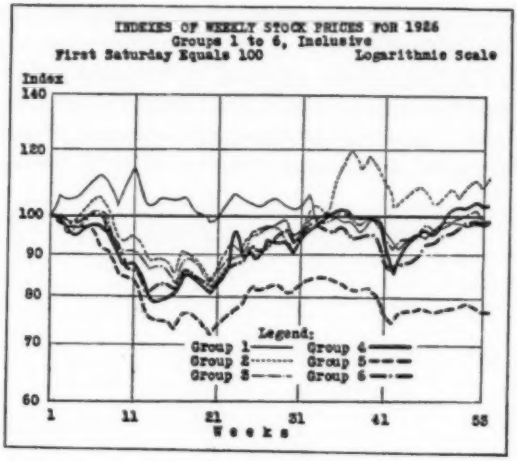

INDEXES OF WEEKLY STOCK PRICES FOR 1926
Groups 1 to 6, Inclusive
First Saturday Equals 100
Logarithmic Scale
Index
140
120
100
90
80
70
60
Legend:
Group 1
Group 2
Group 3
Group 4
Group 5
Group 6
1
11
21
31
41
53
Weeks

FIG. 1

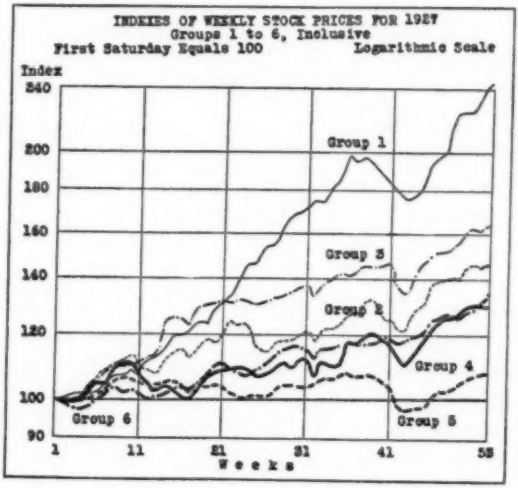

INDEXES OF WEEKLY STOCK PRICES FOR 1927
Groups 1 to 6, Inclusive
First Saturday Equals 100
Logarithmic Scale
Index
240
200
180
160
140
120
100
90
Group 1
Group 3
Group 2
Group 4
Group 6
Group 5
1
11
21
31
41
53
Weeks

FIG. 2

the group numbers, with the exception of Group 5, which fluctuated less than Group 6.

As shown in Figure 3, the stocks in Groups 4 and 5 ($50–$100) fluctuated relatively more in 1928 than they did in 1927. Even so, Groups 1 and 2 fluctuated more than the other groups, and made the greatest gains, with Group 1 fluctuating more than twice as

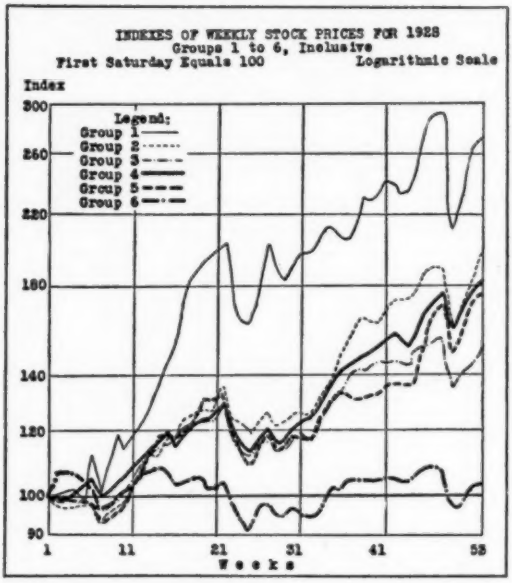


FIG. 3

much as Group 2. The fact that the market was very "bullish" in 1928 may account for the increased movements of the stocks between $50 and $100. In view of the high levels which stock prices reached in 1928, a $75 stock was not a relatively high-price share. The stocks over $100 were relatively sluggish and they closed at a net gain of less than 5 per cent. Assuming that Group 6 stocks were the only high-price stocks for the "bullish" year of 1928, the relationship between high- and low-price stocks was distinct and striking.

Figure 4 presents the data for 1929. Group 5 made a prominent upward movement in the third quarter, while Groups 2, 3, and 6 made only small upward movements. Groups 1 and 4 acted quite differently; they started down in the second quarter and tended to move downward the remainder of the year. When the crash came Group 5 dropped as rapidly as the other groups. The fact that the

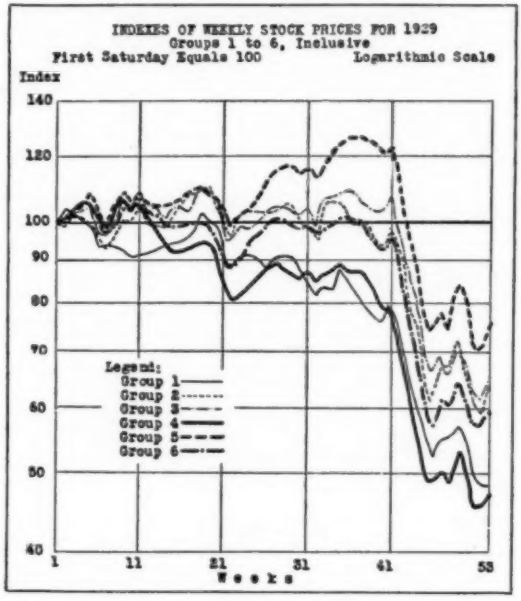


FIG. 4

low-price stocks rose definitely more than the high-price stocks during the "bull" markets of 1927 and 1928 and did not tend to make a proportional recession in 1929 is significant. In other words, the low-price stocks tended to go up considerably more in the "boom" than the high-price stocks, but in the downward movement of the market they did not go down much more than the high-price stocks. The different indexes tended to show no distinct relationship between "price" and the tendency to fall

in an extreme recession. The respective order of the different groups from high to low at the close of 1929 was: Groups 5, 3, 2, 6, 1, and 4.

An examination of the data for 1930 (Fig. 5) shows that the same relationships existed in that year as we have observed in the

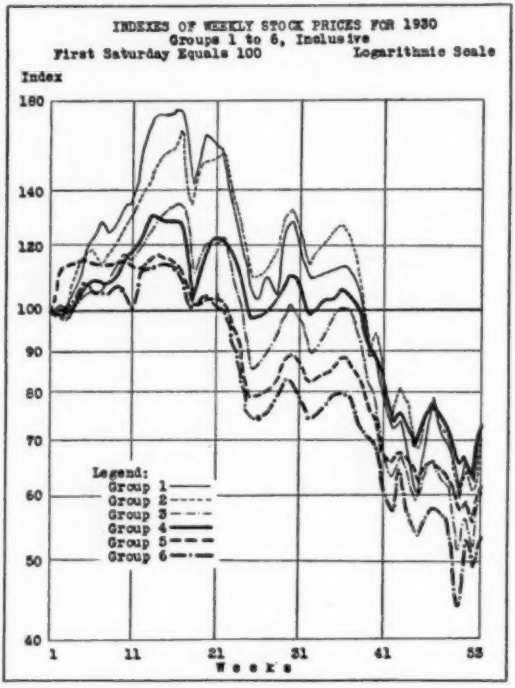


FIG. 5

period from 1927 to 1930. In the upward surge of the market in the first third of the year the low-price stocks showed a distinctly stronger upward movement than the high-price stocks. The actual ranking from high to low at the time of the 1930 highs (the thirteenth and seventeenth weeks) was as follows: Groups 1, 2, 3, 4, 5, and 6. In the recession which followed, the low-price stocks did not lose all of their superior gains. The indexes closed in the

following order, from high to low: Groups 1, 2, 4, 5, 3, and 6. Groups 1 and 2 closed the highest, and Group 6 (stocks over $100) closed the lowest.

The "bear" market of 1931 was the first recession in which the low-price stocks showed a tendency to close lower than the high-price stocks (Fig. 6). The relative movement of the different

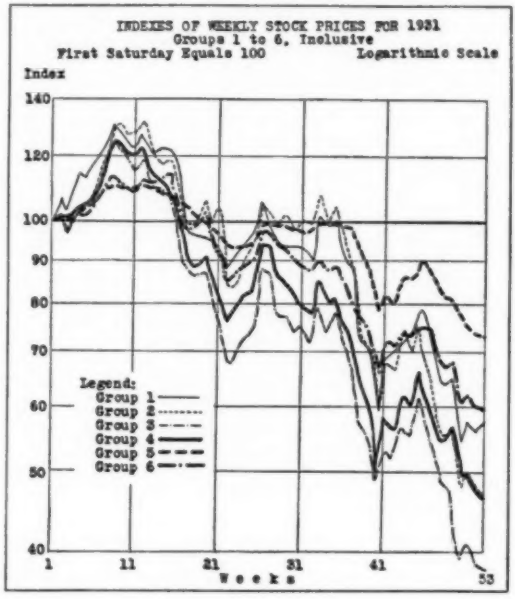


FIG. 6

groups is not constant in this case, because Group 1 (stocks under $10) did not suffer as much as Groups 2, 4, and 3. In 1931 Group 6 (stocks over $100) was not composed entirely of stocks rated according to the originally defined limits. As previously suggested, this was due to the scarcity of active stocks which met the originally defined rating limits—"Ca" to "Ba," inclusive. This same condition existed throughout the remainder of the study; therefore, Group 6 can no longer be compared to the other groups without recognizing that the comparison is subject to additional error.

In 1931 the low-price stocks tended to fluctuate more than the high-price stocks; however, Group 1 did not fluctuate as much as Group 2. This same relationship existed between Groups 1 and 2 in 1929. Apparently there is some tendency for low-price stocks to fluctuate relatively less in a "bearish" market than in a "bullish" market.

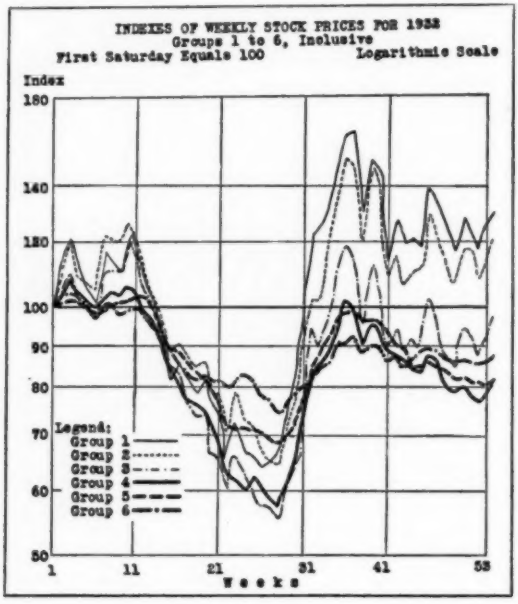


FIG. 7

In the slight upward movement early in 1932 (Fig. 7)[8] the low-price stocks moved up two to three times as much as the high-price stocks. In midsummer, the low for the year, the low-price stocks tended to drop more than the high-price stocks, but the low-price groups did not all suffer the greatest losses. In fact, Groups 3 and 4, including stocks from $25 to $75, were lower than Groups 2 and 1. The tendency for the low-price shares to move higher in case of an upward swing of the market was again evident

[8] In 1932, Group 6 included five stocks rated "Baa."

in the last half of the year. The relationship of previous years existed in regard to the total points moved. The low-price stocks moved the most points and the high-price groups moved the least number of points.

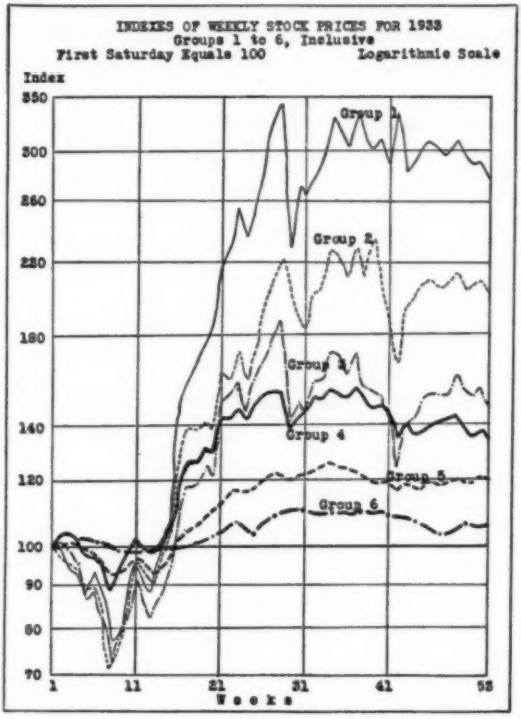


FIG. 8

Before the behavior of the price indexes for 1933 is discussed, it is essential to point out the fact that high-price stocks were so scarce that it was necessary to include four stocks rated "Baa" in Group 5, and Group 6 is composed of six stocks rated "A" and four stocks rated "Baa." The stocks included were in some cases very inactive. This is unfortunate, because the inactive stocks fluctuated less than the active stocks with which they were com-

pared. Because of the extremely low general price level it seems safe to conclude that Group 4 (stocks from $50 to $75) was made up of relatively high-price stocks, and that Group 4 may be observed to determine, to some extent, the behavior of high-price stocks.

Bearing in mind these facts, we see in 1933 a distinct relationship between the different price groups and the extent of their up-

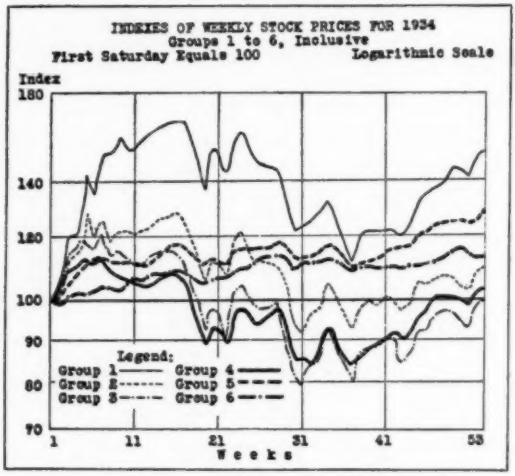


FIG. 9

ward price movement (Fig. 8). Again the low-price stocks rose much more than the high-price stocks. The relationship is so evident that no further comment seems necessary.

In the last year of the study (1934) Group 5 showed a strong tendency to move upward (Fig. 9).[9] However, Group 1, as usual, reached a materially higher level than any other group. Group 2 stayed above Groups 3 and 4 throughout the year.

ANALYSIS OF THE ENTIRE PERIOD AS ONE UNIT

To reach final conclusions in regard to the relative price fluctuations of industrial stocks in different price groups, it seemed neces-

[9] Group 6 included five issues rated above "Ba"; however, Group 5 included only issues falling into the originally defined limits.

sary to examine in a general way the major movements which took place throughout the nine-year period covered by this study. This analysis was facilitated by the construction of a nine-year monthly index number for each of the six different price groups (Fig. 10).

In this condensed form it is possible to get a general picture of the behavior of the stocks in the six different price groups throughout the period. It is impossible to describe in many pages of text what can be readily observed by an examination of the chart; therefore, only the most important factors will be discussed.

The most impressive feature of these indexes is the cumulative effect of the tendency of the low-price stocks to go up considerably more and to come down only a little more than the high-price stocks. Just before the recession of 1929 the different indexes had moved upward in the following respective order, listing from high to low: Groups 1, 2, 3, 4, 5, and 6. "The lower the price the greater the gain" or "the higher the price the less the gain" was the rule. The relationship between the different groups was constant in this respect.

In the "pit" of the depression in 1932, the indexes of the low-price stocks (Groups 1 and 2) were still above the indexes of the high-price stocks. The different price indexes listed from high to low, as of that date, were: Groups 1, 2, 5, 4, 3, and 6. The low point for Group 1 was approximately eighty. This is only 20 per cent below the 1926 level. Group 6 was low at about seventeen. This is a drop of about 83 per cent from the 1926 level.

At the close of 1934 the relationship between the different price groups was still very pronounced. The different groups, listed in order from high to low, were as follows: Groups 1, 2, 5, 3, 4, and 6. At this point the relationship that existed in 1929 was disturbed in only one instance: Group 5 preceded Group 3.[10]

During 1934 the stocks in Group 1 reached a level which was a few points above the previous high reached in 1929. This is especially interesting when the indexes of the stocks selling above $25 are compared with their 1929 highs.

[10] Group 5 included some stocks rated "Baa" in 1933. Taking the period as a whole this discrepancy in rating during the one year is probably not a significant factor.

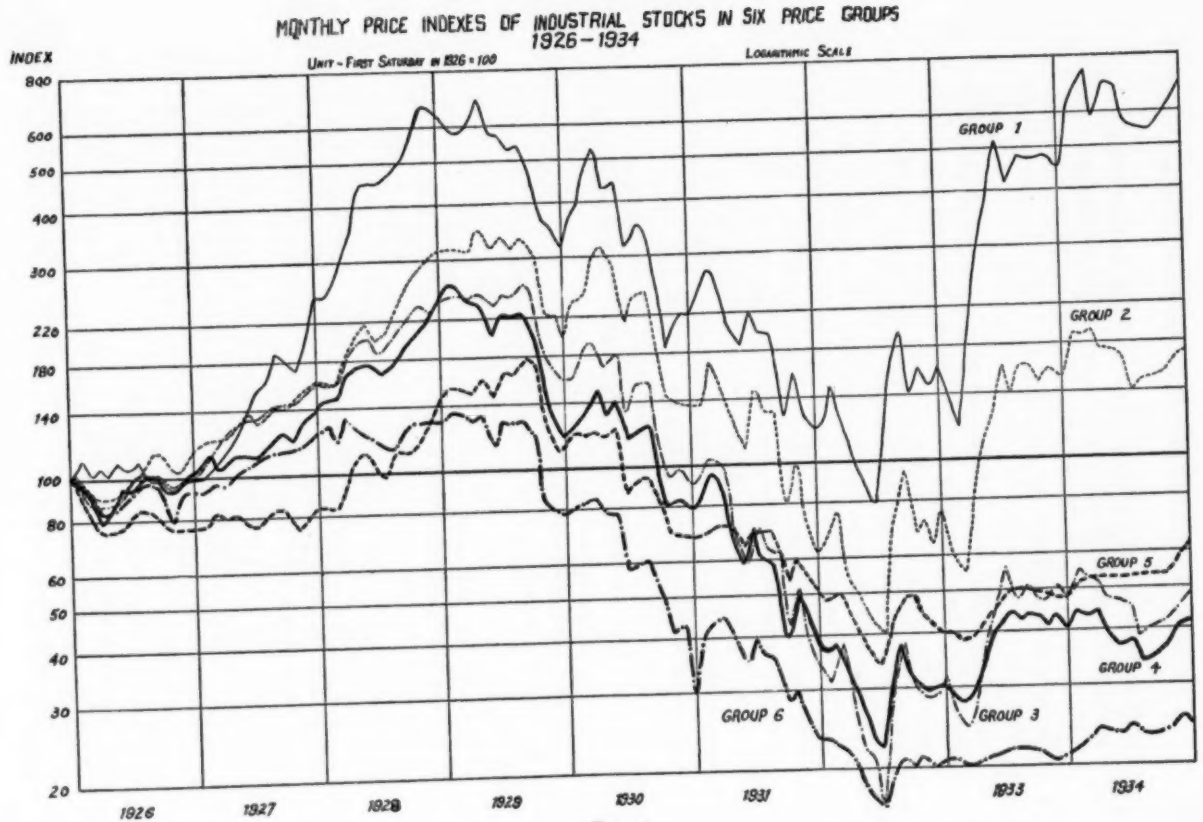

MONTHLY PRICE INDEXES OF INDUSTRIAL STOCKS IN SIX PRICE GROUPS
1926 – 1934
INDEX
UNIT – FIRST SATURDAY IN 1926 = 100
LOGARITHMIC SCALE
800
600
500
400
300
220
180
140
100
80
60
50
40
30
20
1926
1927
1928
1929
1930
1931
1933
1934
GROUP 1
GROUP 2
GROUP 5
GROUP 4
GROUP 3
GROUP 6

FIG. 10

The relative fluctuations of the different price groups are portrayed somewhat differently in Table II. This table is a compilation of the various profits and losses which a speculator would have made (exclusive of commissions and dividends) assuming he had operated as follows: (1) purchased $100 worth of representative stocks in each price group on the first Saturday of the year in which he entered the market or began operations; (2) sold these stocks on the first Saturday of the next year; (3) reinvested the proceeds from the sale of each group of stocks in representative stocks of the same group for the current year; (4) repeated this process each year until he withdrew from the market and discontinued his speculative operations.

Table II shows the various profits and losses which would have been made in any of the different price groups throughout any combination of successive years included in this study. By examining the data to the right of the stub "1926" it is possible to observe quickly the profits or losses which would have been realized, assuming the speculator began operations, or entered the market, the first Saturday in 1926 and withdrew from the market, or discontinued his operations, on the first Saturday in any succeeding year. The same observation is possible for any year from 1925 to 1934, inclusive.

There are many interesting facts to be learned from an examination of this table. A few of the most important features will be mentioned. A speculator entering the market the first Saturday in any year from 1926 to 1934, inclusive, and withdrawing on the first Saturday in 1935 would have made profits, more or less, irrespective of which year he entered the market, had he dealt in stocks representative of the stocks included in Group 1 of this study. A speculator dealing in stocks representative of Groups 3, 4, 5 or 6 would have made profits only if he had entered the market after 1932. He would have suffered losses had he entered in any year from 1926 to 1931, inclusive. Group 2 would have proved unprofitable had the speculator entered the market in 1929 or 1930; it would have been profitable in all other years. The reader may examine the table for many other interesting profit-and-loss combinations.

TABLE II

PROFIT-AND-LOSS COMBINATIONS

(Assuming the Purchase of $100 Worth of Stocks the First Saturday in the First Year and the Reinvestment of Proceeds in the Successive Years; Losses in Italics)

ENTERED THE MARKET THE FIRST SATURDAY IN—	PRICE GROUP	WITHDREW FROM THE MARKET THE FIRST SATURDAY IN—								
		1935	1934	1933	1932	1931	1930	1929	1928	1927
1926	1	$580.26	$349.91	$ 61.49	$ 24.61	$118.99	$210.62	$543.11	$136.18	*$ 2.20*
	2	70.20	55.15	*23.91*	*36.91*	*36.27*	100.11	219.16	61.68	*11.50*
	3	*51.66*	*51.75*	*67.66*	*66.48*	*8.66*	*58.03*	145.00	*60.55*	*1.20*
	4	*59.13*	*60.39*	*70.46*	*63.49*	*20.64*	*17.22*	*152.63*	*38.43*	*3.00*
	5	*38.38*	*51.67*	*59.56*	*49.93*	*32.53*	*19.76*	*47.48*	*16.25*	*22.60*
	6	*74.90*	*77.87*	*79.04*	*75.96*	*69.59*	*23.46*	*29.51*	*24.05*	*4.80*
1927	1	595.55	360.02	65.12	27.41	123.92	217.62	557.60	141.50	.....
	2	52.66	39.16	*31.75*	*43.41*	*22.22*	*79.47*	*186.23*	45.00	.....
	3	*51.05*	*51.15*	*67.26*	*66.07*	*7.55*	*59.95*	*147.98*	*62.50*	.....
	4	*60.32*	*61.55*	*71.33*	*64.56*	*22.95*	*13.81*	*145.28*	*34.40*	.....
	5	*20.39*	*37.56*	*47.75*	*35.33*	*12.85*	*43.10*	*90.54*	*8.20*	.....
	6	*73.62*	*76.74*	*77.97*	*74.74*	*57.55*	*19.61*	*36.03*	*30.30*	.....
1928	1	188.05	90.51	*31.62*	*47.24*	*7.28*	*31.52*	*172.30*	.....	.....
	2	*5.29*	*4.02*	*52.93*	*60.97*	*15.71*	*23.77*	*97.40*	.....	.....
	3	*69.88*	*69.94*	*79.85*	*79.12*	*43.11*	*1.57*	*52.60*	.....	.....
	4	*70.48*	*71.40*	*78.67*	*73.63*	*42.67*	*15.32*	*82.50*	.....	.....
	5	*26.42*	*42.29*	*51.71*	*40.24*	*19.46*	*32.25*	*76.10*	.....	.....
	6	*79.75*	*82.14*	*83.09*	*80.61*	*67.42*	*38.30*	*4.40*	.....	.....
1929	1	*5.73*	*30.07*	*74.90*	*80.63*	*65.95*	*51.70*	.....	.....	.....
	2	*46.67*	*51.39*	*76.16*	*80.23*	*57.30*	*37.30*	.....	.....	.....
	3	*80.28*	*80.31*	*86.80*	*86.32*	*62.72*	*35.50*	.....	.....	.....
	4	*83.82*	*84.32*	*88.31*	*85.55*	*68.59*	*53.60*	.....	.....	.....
	5	*58.22*	*67.23*	*72.58*	*66.06*	*54.26*	*24.90*	.....	.....	.....
	6	*80.62*	*82.91*	*83.82*	*81.44*	*68.80*	*40.90*	.....	.....	.....
1930	1	118.07	44.82	*48.02*	*59.89*	*29.50*	.....	.....	.....	.....
	2	*14.94*	*22.46*	*61.07*	*68.47*	*31.90*	.....	.....	.....	.....
	3	*69.40*	*69.46*	*79.53*	*78.79*	*42.20*	.....	.....	.....	.....
	4	*65.14*	*66.22*	*74.81*	*68.86*	*32.30*	.....	.....	.....	.....
	5	*44.37*	*56.37*	*63.49*	*54.81*	*30.10*	.....	.....	.....	.....
	6	*67.19*	*71.07*	*72.60*	*68.58*	*47.20*	.....	.....	.....	.....
1931	1	210.63	105.44	*26.26*	*59.89*	.....	.....	.....	.....	.....
	2	24.90	13.86	*44.16*	*68.47*	.....	.....	.....	.....	.....
	3	*47.04*	*47.15*	*64.48*	*78.79*	.....	.....	.....	.....	.....
	4	*48.50*	*50.10*	*62.79*	*68.86*	.....	.....	.....	.....	.....
	5	*8.66*	*28.36*	*40.05*	*54.81*	.....	.....	.....	.....	.....
	6	*37.87*	*45.21*	*48.12*	*68.58*	.....	.....	.....	.....	.....
1932	1	445.94	261.07	29.60	.....	.....	.....	.....	.....	.....
	2	169.75	145.90	20.60	.....	.....	.....	.....	.....	.....
	3	44.27	43.98	*3.50*	.....	.....	.....	.....	.....	.....
	4	11.96	8.49	*19.10*	.....	.....	.....	.....	.....	.....
	5	23.11	*3.44*	*19.20*	.....	.....	.....	.....	.....	.....
	6	4.42	*7.92*	*12.80*	.....	.....	.....	.....	.....	.....
1933	1	321.24	178.60	.....	.....	.....	.....	.....	.....	.....
	2	123.68	103.90	.....	.....	.....	.....	.....	.....	.....
	3	49.50	49.20	.....	.....	.....	.....	.....	.....	.....
	4	38.39	34.10	.....	.....	.....	.....	.....	.....	.....
	5	52.36	19.50	.....	.....	.....	.....	.....	.....	.....
	6	19.75	5.60	.....	.....	.....	.....	.....	.....	.....
1934	1	51.20	.....	.....	.....	.....	.....	.....	.....	.....
	2	9.70	.....	.....	.....	.....	.....	.....	.....	.....
	3	.20	.....	.....	.....	.....	.....	.....	.....	.....
	4	3.20	.....	.....	.....	.....	.....	.....	.....	.....
	5	27.50	.....	.....	.....	.....	.....	.....	.....	.....
	6	13.40	.....	.....	.....	.....	.....	.....	.....	.....

Table III, which shows the number of "market fluctuations," the total points moved, and the net profits moved by each of the different price groups throughout the nine-year period, presents a general summary of the data which have been discussed in the foregoing pages. This table shows some tendency for the low-price stocks to make a greater number of price changes or "market fluctuations" than the high-price stocks. The various groups ranked in the order of the number of "market fluctuations" are as follows; Groups 2, 1, 4, 3, 6, and 5. Although this shows no constant relationship from low- to high-price stocks, it must be

TABLE III

ANALYSIS OF THE WEEKLY PRICE INDEXES, 1926–35
(Groups 1–6, Inclusive)

Price Group	Number of "Market Fluctuations"			Total Points Moved			Net Points Moved	
	Up	Down	Total	Up	Down	Total	Up	Down
1	92	93	185	1,860	1,413	3,273	446.7	.....
2	100	103	203	1,401	1,235	2,636	165.2	.....
3	86	88	174	1,008	988	1,996	18.6	.....
4	89	86	175	774	776	1,550	.....	1.8
5	65	65	130	539	540	1,079	.....	.3
6	82	79	161	441	534	975	.....	92.8

admitted that the low-price stocks show some tendency to change price or make "market fluctuations" more frequently than the high-price stocks.

An examination of the total points moved,[11] which is a rather definite measurement of the amount of price change, shows that the low-price stocks fluctuated considerably more than the high-price stocks. In order to express this relationship more clearly, the grand total points moved by each of the different price groups have been expressed in percentages. The 3,273 points moved by

[11] This refers to points moved by each of the respective index numbers for each year. It does not refer to dollars of price change. This analysis is subject to two elements of bias: (1) the base was held constant for the entire year, and (2) the definition of a "market fluctuation" as a price change of 1 per cent or more tends to increase the number of "market fluctuations" of the low-price stocks.

Group 1 were considered to be equivalent to 100 per cent, and the other price groups were expressed in percentages of Group 1. The percentages are presented in Table IV. It can be observed from Table IV that there tends to be a constant relationship between price level and the amount of price change.

The total points moved up and the total points moved down by each of the different price indexes (Table III) show quite definitely that the low-price stocks moved up much more than the high-price stocks. These totals also show that the low-price stocks did not move down sufficiently more in a recession than the high-price stocks to lose the superior gains which they made in the upward swings of the market.

TABLE IV

RELATIVE PRICE FLUCTUATIONS OF THE STOCKS IN THE DIFFERENT PRICE GROUPS
(Expressed in Percentages)

Price Group	Percentages	Price Group	Percentages
1	100	4	46
2	81	5	33
3	61	6	30

ANALYSIS OF TENDENCIES TO LEAD OR LAG

The third objective of this study was to attempt to determine whether or not certain price groups tended to "lead" or "lag" the market. This section will describe the analytical methods used to ascertain these facts, and then discuss the findings.

METHOD OF ANALYSIS

Each of the annual index numbers for the six different price groups was compared with Standard Statistics Daily Stock Price Index of Fifty Industrial Stocks. The following items were tabulated as each of the indexes was compared with the Standard Statistics' Index: (1) the number of times that each of the indexes of the respective price groups "led" or "lagged" the Standard Statistics' Index up on an upward "market movement," or down on a downward "market movement," by one week, two weeks, and three or more weeks; (2) the number of times that the two indexes made "market movements" upward and downward at the same time; (3) the number of times that the respective in-

dex numbers made no "market movement" when the Standard Statistics' Index did make a "market movement"; (4) the number of times that the respective index number made a "market movement" which was in the direction opposite to the "market movement" of the Standard Statistics' Index—the number of "contrary movements"; (5) the number of times that each of the indexes for the different price groups made "false starts" up and "false starts" down.[12]

The Saturday values were used when the Standard Statistics' Index was plotted, with the exception of 1926 and 1927. In 1926 and 1927 the Saturday values were not available, and it was necessary to use the Friday values. This gave the indexes of the different price groups a one-day advantage when "leads" were counted, and a one-day disadvantage when "lags" were counted.

RESULTS

Table V shows that Group 4 led the market more often than any other group. It led the market eleven times in sixty-nine "market movements," but made forty-eight "false starts" and failed to move with the market nine times. In other words, it made 80 per cent "false starts" and led the market only 16 per cent of the time.

The other groups led the market the following number of times: Group 1, eight; Group 5, eight; Group 6, seven; Group 2, five; and Group 3, three. In view of the fact that the two groups which were next highest to Group 4 led the market less than 12 per cent of the time and made fifty and thirty "false starts," respectively, there is no good evidence that any particular price group tends to "lead" the market.

In regard to the number of "lags," Table V shows that Group 6 lagged behind the market in fourteen of the sixty-nine "market movements." As previously suggested, high-price stocks became so scarce in the later years of the study that some inactive issues were included in Groups 5 and 6. This inactivity accounts

[12] In a test study these same facts were ascertained when the "market movements" of each of the six different price groups were compared with each other for the year 1926. The data revealed nothing of consequence and further comparisons of this nature were not made for the succeeding years.

for a considerable portion of the fourteen "lags" which Group 6 experienced. In fact, eight of the "lags" were experienced after the inactive issues had been included.

TABLE V

RECAPITULATION OF THE COMPARISON OF THE STOCKS IN THE DIFFERENT PRICE GROUPS WITH STANDARD STATISTICS' DAILY STOCK PRICE INDEX OF FIFTY INDUSTRIAL STOCKS

ITEMS			PRICE GROUPS					
			1	2	3	4	5	6
Number of "leads"	Up	One week	....	1	2	3	1	1
		Two weeks	2	1	....	1	2	2
		Three or more weeks	1	....	....	....	....	1
	Down	One week	2	1	....	1	1	1
		Two weeks	....	1	....	2	....	....
		Three or more weeks	3	1	1	4	4	2
Total			8	5	3	11	8	7
Number of "lags"	Up	One week	5	3	3	1	2	2
		Two weeks	1	1	1	3	1	1
		Three or more weeks	1	2	1	....	1	2
	Down	One week	4	2	2	1	1	4
		Two weeks	....	2	2	3	3	2
		Three or more weeks	....	1	1	....	3	3
Total			6	11	10	8	11	14
Number of "market movements" which were the same		Up	21	25	27	23	19	17
		Down	21	23	25	18	11	11
Total			42	48	52	41	30	28
Number of times that the index made no movement			8	5	4	9	20	20
Grand total of "market movements" plus the number of no movements			69	69	69	69	69	69
Number of "contrary movements"			1	1	....	1	1	2
Number of "false starts"		Up	24	23	24	22	12	10
		Down	26	33	26	26	18	20
Total			50	56	50	48	30	30

Groups 2 and 5 each lagged eleven times, but this number is not sufficient to indicate a tendency for these two groups to lag regularly. Eleven "lags" out of sixty-nine "market movements" amount to nothing more than mere chance. The other groups lagged even less frequently.

The number of "market movements" which moved with the Standard Statistics' Index is evidence that there is no tendency for any price group to lead or lag. It will be noted from Table V that, with the exception of Groups 5 and 6 which were inactive (each failed to make "market movements" twenty times), the indexes of the different price groups fluctuated at exactly the same time as the Standard Statistics Index from 60 to 76 per cent of the time. The total number of "contrary movements" made by all of the indexes of the different price groups amounted to only six, or considerably less than 2 per cent. As one would expect, the "false starts" were many. They ranged from thirty to fifty-six, with Group 2 making the most "false starts."

CONCLUSIONS

Unless there are serious uncompensated errors in the statistical work here presented, this investigation would seem to establish the existence of certain relationships between price level and price fluctuations which have hitherto gone unreported by students of stock-market phenomena. These relationships may be briefly stated as follows:

1. Low-price stocks tend to fluctuate relatively more than high-price stocks.

2. In a "bull" market the low-price stocks tend to go up relatively more than high-price stocks, and they do not lose these superior gains in the recessions which follow. In other words, the downward movement of low-price stocks is less than proportional to their upward movement, when compared with the upward and downward movement of high-price stocks.

In regard to leads or lags it may be said that there is no evidence which tends to show that any particular price group tends to lead or to lag the market. Therefore, stocks classified according

to different price ranges are of no value as techniques for forecasting stock prices.

Assuming (1) that the future behavior of the various price groups will be similar to their past behavior and (2) that the selection of stocks on the basis of the activity for the current year does not account completely, if at all, for the superior performance of the stocks in the low-price groups,[13] it seems logical to conclude the following:

1. Low-price industrial stocks offer greater opportunities for speculative profits than high-price industrial stocks.

2. In case two or more issues of industrial stocks seem to offer equal prospective profits, the speculator should purchase the shares selling at the lowest price.

[13] A short test study indicates that the element of "hindsight" entering into the selection of active stocks does not account completely, if at all, for the superior performance of the low-price stocks. The test study was made for the years 1928 and 1933. In this test, Group 1 and Group 6 stocks were selected on the basis of the previous year's activity instead of the current year's activity. The performance of the low-price shares was superior in both analyses.

A GOVERNMENT INSURANCE MONOPOLY

SIMON G. HANSON[1]

IT IS common practice among writers on South American subjects to refer to Uruguay as the leading laboratory for social experimentation on the continent. By pioneering in many lines of labor legislation, by venturing boldly into broad pension schemes, and by continually steering a course leading to state ownership and operation of industry, the Uruguayan government has attracted to its economic policies attention wholly out of proportion to its position as the smallest of South American republics. Actually, the significance of its labor legislation has been much exaggerated owing to the failure to consider the manner in which the laws have been enforced. The law providing a minimum wage for rural laborers, for instance, was received with wide interest, although the difficulties of enforcement and the unwillingness to press for enforcement largely nullified the intent of the measure. The utter impracticability of the pension plans, demonstrated by the collapse of the system in 1932–33, testifies to the tendency to legislate without adequate consideration of the implications of the laws. With the exception of politically inspired criticism and defense, there has been no evaluation of the experiments in state industry.

There is a state monopoly of electric light and power, which, by ignoring the interests of the consumer has accumulated profits in much the way that a private monopoly might have done; the same organization has begun to exploit the mineral resources of the nation. There is a national meat packing plant, born of a desire to combat the "trust" and given a monopoly of the supply of Montevideo, which is under sharp criticism by producers and consumers alike for the manner in which its inefficient organization has kept meat prices high without corresponding gain to producers, in an effort to show a profit annually. A million-dollar deficit

[1] Mr. Hanson is an instructor in economics at Harvard University.

summarizes the state's failure as a fish vendor during the past twenty-five years, although it is at present producing a small profit on its share (65 per cent) of the fish business. The monopoly of telegraph service within the country provides evidence of the deterioration in service that may result from lack of competition. The postal service is another overstaffed monopoly abounding in the evils of "red-tape" and officialism. Telephones in the capital are now owned by the state after a long period during which the government, by refusing to protect investments for modernization by private firms, saddled the city with one of the world's worst telephone systems. The state runs a few scattered railway lines and can thank the depression for terminating negotiations for the purchase of the entire network. It operates a chain of hotels whose gambling tables produce considerable revenue. There is a government organization manufacturing chemical products and another enjoying a monopoly of alcohol production and rapidly advancing to a monopoly of gasoline and oil distribution. The port works are owned and operated by the government; a small section of the tramway system is administered by it; the municipality sells meat at retail. There is a powerful state bank and a mortgage bank that has been so helpful to rural interests that its own stability was endangered. There is one enterprise, the State Insurance Bank, on whose success there is little debate in Uruguay. The record of this institution, often spoken of as state ownership at its best, is examined in this article.

HISTORY

On April 26, 1911, President José Battle y Ordoñez asked the legislature to create a state monopoly of insurance in Uruguay. Battle's general theory was that the state must inevitably come to participate in industry either to protect the consumer in lines where competition was impracticable, or to provide revenue, or because "continued export of national wealth by foreign companies operating here was undesirable." The insurance monopoly was especially justifiable, he believed, because it would promote social security by popularizing insurance at lower rates and because the private firms were making excessive profits which, if the

current rates were to be maintained, might just as well accrue to the government, especially since domestic firms had generally been unable to compete with foreign companies.[2] There were then about 35 firms operating in Uruguay and over two-thirds of the business was done by foreign companies.[3] The chief classes of insurance written were fire, life, and marine, with less than 5 per cent of the premiums drawn from other classes. In 1908 the prevailing hostility to foreign capital had led to the introduction of a project for a state insurance monopoly. It failed to pass the Cámara de Representantes but a new tax measure was enacted which discriminated against foreign firms both in the rate of tax (*patente adicional*) on premiums and in the deposit-guaranty required; a foreign firm could operate on the same basis as domestic companies only if it invested $150,000 in government securities in addition to the guaranty.

The project of 1911 in its most radical form called for an immediate monopoly of all classes of insurance without indemnification of existing firms. This raised a storm of protest from representatives of foreign capital and from all local newspapers except the president's own paper. It was argued: that the action would be unconstitutional; that in the absence of competition service would deteriorate and rates would never be lowered, whereas under private initiative fire insurance tariffs had been cut in half during the last twenty years; that the concentration of risks was dangerous in the event of a great local disaster; that profits were

[2] The executive's message, the reports of the committees, and the debates in the Cámara de Representantes, together with a collection of annual financial statements of the Banco de Seguros are available in *El Banco de Seguros, "Creacion, funcionamiento, desarrollo"* (Montevideo, 1927).

[3] Premiums paid in four years, 1907–10:

	Domestic Companies	Foreign Companies with Privileges Derived from Special Investments	Foreign Companies
Fire insurance	$419,196	$392,998	$1,582,293
Marine	50,024	.....	717,360
Life	911,319	162,350	486,964
Other	177,669	.....	70,668

Source: *El Banco de Seguros, "Creacion, funcionamiento, desarrollo"* (Montevideo, 1927), p. 6.

not excessive; that the Standard Life Assurance Company, which wrote the greater part of the life business, had incurred losses while educating the people to the desirability of life insurance and that the risks paid by it to date exceeded premiums received; that the companies paid $40,000 annually in taxes besides stamps and *patentes;* that politics would surely enter into the administration of the state enterprise.

The advocates of the measure held: that fire insurance was being sold under an agreement between the companies which fixed uniform tariffs and thus the consumer was not benefiting from the alleged advantages of competition; that economies would result from the consolidation of 35 offices into one and from elimination of competitive advertising; that the backing of the government provided better security than that of private firms; that profits of $400,000 annually could be expected if current rates were maintained. The loss of income from the *patente* on premiums could not be considered a diminution of revenue from insurance sellers since the tax had been passed on to consumers. To the objection that an applicant would have no agency to go to if the state rejected his risk, the answer was made that the state could be liberal because it had greater power to penalize fraud such as *incendio especulación* and that it would be liberal because its aim was service and not profit. The bill did not represent a socialistic attack on capital, argued the executive's representative, for no capital is needed for dealing in insurance: insurance is only a "mutualism" where the company acts solely as administrator, and since the business is simple and automatic it is especially well suited to government administration. The North American private insurance company scandals were duly commented upon. The right of existing firms to indemnity was debated at great length in the Cámara while *El Dia,* the administration newspaper, brushed it aside with the observation that "When the railways did away with the business of the 'diligencia' runners, no one thought it necessary to reimburse them; the present case is the same." There was little opposition to the state's taking over workmen's compensation insurance in which operations were on a small scale and still on an uncertain basis.

The law as finally passed and promulgated on December 27, 1911, was more moderate than the original project. The state was given a monopoly limited to three classes of risks: fire, life, and workman's compensation. The executive was to fix the date when the monopoly of each of these classes would become effective. Meanwhile, the existing agencies could continue to operate, but on a provisional basis; no new agencies could be established to deal in the three classes, and for other risks they could operate only on a temporary basis. The Banco de Seguros del Estado (State Insurance Bank) was established with capital of $3,000,000, obtained by a bond issue.

With the influence and facilities afforded it, the State Insurance Bank was a strong competitor from the beginning. It offered as security the guaranty of the government in addition to its own. It was not required to affix stamps to its documents nor to pay any tax on gross income other than the fire brigade tax. It did not join the local association of fire insurance companies nor did any re-insurance pass between it and the member firms, but in general it adhered to the tariffs of the association and relied on the difference in total cost provided by the tax differential to attract business.[4] The bank was established on January 11, 1912, and it began operations in fire insurance March 1, in workman's compensation March 15, and in hail, human life, pedigree-animal life, marine, glass, and automobile civil responsibility later in the year. For the year 1912 its income from fire insurance premiums exceeded that of any other company and amounted to 23.33 per cent of the total fire premiums paid; it had immediately gained two-thirds of the workman's compensation business and a large part of the other classifications. In 1913 it purchased the portfolios of several companies out of its profits, with the result that it became the only firm writing workman's compensation. The executive, therefore, in response to the bank's request, on April 8, 1914, declared effective the monopoly in workman's compensation insurance. The bank claimed that this business produced no net revenue but that it was desirable to generalize such insurance as a service to the community. Similarly, the marine division, by

[4] Private firms passed on the entire premium tax to consumers directly.

writing policies on coastwise traffic which other firms considered risky and unattractive, lost money and defended the loss by pointing to the service rendered. By 1915, 41.67 per cent of the total insurance premiums were being paid to the State Insurance Bank. Meanwhile, the competitive position of its rivals was weakened by an increase in the license and premium taxes; the $400 license tax and 5 per cent tax on gross income of 1911 had risen by 1916 to $1,000–$2,000 (according to income) and 7 per cent.[5]

In 1914 the bank initiated a campaign to promote provision for old age among the poorer classes. *Seguro popular*, as this type of insurance was known, was offered without medical examination and without rigid requirements for payment of premiums. The poor man was enabled "to substitute an insurance policy for a savings bank account." With the ordinary policy he might lose by being unable to continue paying premiums due to loss of his job, but with *seguro popular* he could deposit money whenever he wished; in the event of becoming incapacitated he could withdraw with the full amount of his contributions plus 6 per cent interest; if he died before the date of policy payment his savings would go to his heirs; if he lived to old age he had a permanent income. The law of November 10, 1916, provided that capital payments up to $5,000 and income up to $1,200 annually derived from *seguro popular* could not be attached. *Seguro popular* (it was really a deferred annuity with special clauses) failed to gain favor with the public, and at present there are less than 200 policies of this type outstanding. In 1919 the bank was charged with the administration of the old-age pension system.[6] The law of November 26, 1920, provided for compulsory insurance for government employees and stated that any employer in certain specified industries is liable at civil law for accidents to his employees arising out of or in the course of their employment. This act increased the bank's volume of workman's compensation business, and by setting up definite rules for payments or annuities for the various types of accidents necessitated an increase in rates.

[5] Excluding the fire brigade tax, which the State Bank also paid.

[6] In 1933 administration was transferred to a separate institution for old-age pensions.

On July 19, 1926, the monopoly of the state was extended by law from the three classes of risks to all risks and an executive decree dated August 30, 1926, declared the monopoly effective in insurance of plate glass and animals, for civil responsibility for

TABLE I

COMMISSIONS ON REINSURANCE, AND PREMIUMS PAID TO THE STATE INSURANCE BANK, 1912–34

(In thousands of pesos)

Year	Premiums Paid	Commissions on Reinsurance
1934	5094.3	320.5
1933	4918.1	290.3
1932	5472.3	270.6
1931	6555.9	310.2
1930	6776.6	258.0
1929	6165.7	220.8
1928	5598.5	224.3
1927	6363.5	235.1
1926	5780.8	180.3
1925	5570.6	215.0
1924	5101.0	196.7
1923	4675.9	145.4
1922	3922.5	186.0
1921	3641.2	219.9
1920	3256.2	253.3
1919	3234.2	240.5
1918	2151.8	156.2
1917	1829.2	180.9
1916	856.3	90.1
1915	664.0	58.8
1914	584.8	41.1
1913	662.5	29.3
1912	354.2	12.6

Sources: *Memoria y balance general del Banco de Seguros del Estado* for years up to 1929; *Cuenta de ganancias y perdidas y balance general* for 1930–34; for 1929 financial statements were late in being approved and were finally published in *El País*, February 26, 1931.

damage to third parties, against hail, damage by uprisings, and all the risks of agriculture, and against non-payment of house rent. The number of private companies and their business have been steadily reduced; in 1934 only 21 companies remained with a total premium income of $579,208 for fire insurance, $367,066 for life, and $143,655 for marine insurance. The State Insurance Bank is now writing two-thirds of the fire insurance, three-fourths of the life and marine insurance, in addition to the monopolized classes.

The great increase in the volume of business—the premiums of the State Bank alone totaled $5,094,284 in 1934 as against an annual average of premiums paid to all companies of $1,242,710 in the years 1907–10—testifies that one prediction of the conservative press has not materialized: "If the Government persists in carrying out this extraordinary and unprecedented legislation it will probably have the effect of practically isolating Uruguay from the benefits of insurance."[7] We shall consider next the accuracy of the second prediction: "Every sort of insurance will be impracticable except by grace and on the terms of an arrogant bureaucracy, unchecked by competition and probably unguarded by the restrictions of the most precise of sciences, i.e., that of the actuary."[7]

RATES AND SERVICE

In 1911 it was feared that the State Insurance Bank would be incapable of the efficiency, constant improvement of service, and attention to expansion of business which the profit motive encourages in private industry. A quarter of a century of experience has raised a question as to whether the conduct of the bank has not been too much like that of a private corporation. Service has been good, payments of losses prompt and with a minimum of litigation, red-tape relatively unnoticeable. Fire claims are usually settled within a week and life insurance policies in less than a week; adjustments in the interior are somewhat more delayed by the slow communication to and from the capital. There has been no attempt to squeeze out rivals by cut-throat competition, but the bank has continually endeavored to increase the volume of insurance written in Uruguay and to hold for itself the net increase. For instance, it has always been difficult to sell life insurance in Uruguay;[8] the largest amount carried by any individual in Uruguay, is at present $100,000,[9] and as late as 1928 the total amount of life insurance in force was only $14,152,095. The bank

[7] *Montevideo Times*, quoted in the *South American Journal* (June 10, 1911), p. 694.

[8] One obstacle is the superstition among Uruguayan women that their men will die if insured.

[9] Opinion of Mr. H. Hormaeche of the Banco de Seguros. The limit per individual carried by the Banco de Seguros is $50,000.

pushed its agents vigorously and initiated a monthly payment plan that proved a great success; by December 31, 1934, the volume of life policies outstanding at the bank had risen to $25,940,899.[10] Research into mortality statistics has convinced the directors of the bank that the subtropical rate basis used by its competitors is unwarranted because Uruguayan mortality compares favorably with that of France. Thus the bank is operating on a lower rate-schedule than that of its rivals. It also carries on a profitable fire reinsurance business with French, British, Italian, German, and Japanese companies.

Officials of the bank like to say that the organization is conducted along the lines of an efficient private corporation, and they point to its large profits as proof of this. Has the bank, then, merely acted as a private monopoly would have done, aiming at maximum profits? Have the directors ignored the fact that at its founding the service motive was emphasized—the opportunity to generalize the benefits of insurance and thereby promote social security? The answer is difficult to find. Certainly the bank has been liberal in accepting risks and in extending its field of operations. It is handling a large volume of workman's compensation business on a very narrow margin. It initiated several types of insurance when there was too little experience to make profit probable—for instance, the insurance against non-payment of rent. Since in Uruguay it is a long-drawn-out process to get a non-paying tenant out of a house, landlords demand a guaranty of rent. The bank undertook to meet this need by *seguro caución de alquileres*, but in fixing rates such as would be within the range of the tenants' ability to pay and lacking foreign experience in the field for guidance, heavy losses were incurred; new business in the class finally was suspended in 1933 pending further study. On the other hand, it is true that the Bank has not been especially liberal in its payments of claims; there is considerable feeling among experienced insurance men associated with the Bank that a more liberal policy should be adopted. The Bank's policy of not paying life policies of suicides is likewise considered unsatisfactory by

[10] Wages are generally paid fortnightly and salaries monthly in Uruguay. The private companies continue to use a quarterly or semiannual payment system.

many. From time to time members of the legislature have voiced objections to certain rates.[11] Much of the criticism of the bank arises from its rejection of wholly unsound and politically inspired propositions, such as the pressure for a policy that would cover all the risks of agriculture and assure the farmer of a minimum annual income, and that for insurance against non-redemption of mortgages. The refusal to serve the community at heavy loss in such cases has led to the charge that the bank is acting too much like a private monopoly. In all fairness it may be said that the bank has not attempted to distribute the earnings of the monopoly among buyers of insurance. The cost of the major lines of insurance has not been radically affected by the monopoly . But this does not mean necessarily that profits similar to those of a private monopoly have been used to lighten the burden of taxpayers.

PROFITS

Table II shows the distribution of profits since the bank was founded. In the past decade profits have averaged over $700,000, annually;[12] adequate reserve funds have been set up. With the profits should be compared the amount of taxes that private firms might have paid. In 1934 the private companies, on a volume of business roughly one-fifth of that of the State Bank, paid $69,901 in business taxes and $24,580 in additional premium taxes.[13] Since the bank is exempt from these taxes, the govern-

[11] See, for instance, *Diario oficial de la republic oriental del Uruguay*, CI (1930), 187, for a protest against hail insurance rates. Also, *Diario de sesiones de la Asamblea Deliberante*, I (1933), 95, for criticism of rates on agricultural property and insistance on fact that private firms would take the business at lower rates.

[12] $712,300 annually, not including interest on the original bond issue for the founding of the bank, which averaged about $130,000 annually.

[13] The bank is exempt from these taxes and stamp taxes on documents but pays full taxes on real estate and the full tax for support of the fire brigades. It should be remembered that there is a large volume of government business placed exclusively with the bank. Insurance is a prerequisite for loans by the Banco Hipotecario, which arranges for it with the Insurance Bank. Government buildings, government workman's compensation, etc., are all insured at the bank. Through a questionable arrangement of the pension systems, the bank was classified in the Caja de las Instituciones Bancarias and the private insurance firms in the Caja de Servicios Publicos with the result that the bank had to make slightly larger contributions to the pension funds.

ment is thus losing considerable revenue on its four-fifths of the insurance business. The original law setting up the bank had provided that until further legislation specified otherwise all profits were to be put into reserves. No contribution was made to the general revenue of the state until 1922, when it was provided that

TABLE II

DISTRIBUTION OF PROFITS OF THE STATE INSURANCE BANK, 1912–34

(In thousands of pesos)*

Year	Profit	Contribution to Government	Shared among Employees	Interest on Original Bonds	Amortization of Original Bonds	Special Payment to Pension Fund	Addition to Reserves
1934..	850.9	592.6	.....	110.1	.....	.....	148.2
1933..	768.7	500.0	.....	110.1	.....	.....	158.6
1932..	701.1	329.0	39.7	111.0	67.4	.....	154.0
1931..	1,004.6	524.2	77.8	114.3	64.1	.....	224.2
1930..	766.6	277.9	37.4	127.8	45.5	.....	277.9
1929..	876.0	326.7	43.7	135.5	43.4	.....	326.7
1928..	950.6	324.7	72.8	139.5	88.9	.....	324.7
1927..	924.0	372.4	.....	142.1	37.0	.....	372.4
1926..	774.4	293.8	.....	161.7	.....	25.0	293.8
1925..	803.9	312.0	.....	145.6	34.4	.....	312.0
1924..	1,002.4	250.0	.....	146.1	.....	.....	606.3
1923..	764.8	250.0	.....	146.1	.....	.....	368.7
1922..	641.8	247.9	.....	146.1	.....	.....	247.9
1921..	902.3	.....	.....	146.1	.....	.....	756.2
1920..	929.6	.....	.....	146.1	.....	.....	783.5
1919..	912.8	.....	.....	146.1	.....	.....	766.7
1918..	550.9	.....	.....	146.1	.....	.....	404.8
1917..	528.9	.....	.....	146.1	.....	.....	382.8
1916..	262.9	.....	.....	146.1	.....	.....	116.8
1915..	256.9	.....	.....	184.9	.....	.....	72.0
1914..	238.1	.....	.....	.....	.....	.....	238.1
1913..	482.9	.....	.....	.....	.....	.....	482.9
1912..	267.1	.....	.....	.....	.....	.....	267.1

* The figures for the early years are not strictly comparable; the system of providing for *riegos en curso y siniestros en trámite* was not clearly defined until 1919.

Sources: same as Table I.

the bank must pay into the general revenue (*rentas generales*) $250,000 annually when its profits exceeded $500,000, or 50 per cent of the profits when they were less than $500,000.[14] In 1926 the law was changed to require a contribution of 50 per cent of

[14] Calculated on profits minus interest on original bond issues and amortization of such bonds.

profits. In 1931 and 1932 extraordinary contributions of $300,000 annually were exacted from the bank to help meet budgetary deficits, in addition to 50 per cent of the remaining profits. After the coup d'etat of 1933 the government raised its share of the profits to 80 per cent. With the exception of the extraordinary contributions since 1931 the bank has probably not paid to the government as much as, and certainly not more than, would have been forthcoming from private firms in the ordinary course of business. But a very valuable property has been built up with special reserves totaling $6,547,684 on December 31, 1934.[15]

The danger involved in state monopoly of industry for purposes other than the lowering of rates to consumers is that the ease of earning a profit under monopoly conditions may lead to a reduction in efficiency or to overgenerous treatment of employees. The bank has largely avoided these pitfalls. It is probably the least overstaffed government organization in Uruguay; of the 60,000 state employees who form a deadly burden on a population of less than 2,000,000, only about 300 are on the pay-roll of the Insurance Bank. Wages and salaries are higher than those paid by the various ministries (*ministerios*), but there is a balancing element in that employment in the ministries is permanent, while dismissal is possible in the bank. The officials of the bank claim that its salaries have usually been slightly above the general level in Montevideo, although the economy measures of the past few years have reduced all government salaries more than the reductions made in private industry. In 1929 the bank set up a minimum wage of $70 monthly, with automatic increases of $5 annually until a maximum of $90 is reached, which could be raised to $100 for men married or 10 years in the service of the bank; the economy measures since 1931 caused the suspension of increases. In 1930 the directors voted to pay employees receiving less than $150 monthly an additional sum of $5 per month for each dependent. Applicants for positions in the bank must pass a thorough examination,

[15] This does not include reserves amounting to $11,677,579 against "risks in force and damages under negotiation" which are calculated by the method explained in detail in *Memoria y balance general del Banco de Seguros del Estado correspondiente al año 1919:* value of premiums paid is distributed according to duration of policies so that the accounts of the current year receive the share of premiums corresponding to the year.

and the successful candidates are in general a more select group than the employees of the other government organizations in Uruguay. From 1928 to 1932, $271,400 of the profits were distributed among the employees.

The absence of need to lower rates might lead some directorates to ultra-conservatism in the selection of investments, and others more politically minded, to investments in unsound local propositions. The bank's policy has been conservative. The law of 1911 forbade purchase of corporation shares and purchases or loans tending to foment territorial or stock-exchange speculation. Until recent years the bank has concentrated on Uruguayan government securities and bonds of the Banco Hipotecario (State Mortgage Bank); during the early twenties it built a group of houses at Punta Carretas for sale on monthly instalments in an effort to bring down the cost of housing in Montevideo. At present it is seeking to diversify its investments, and about one-fifth of its holdings are now in rural and urban real estate.

ADMINISTRATION

It will be clear by now that the bank has been fortunate in having administrators who have not yielded easily to political pressure and who have never ceased to insist on both efficiency and conservatism in operations. The law of 1911 provided for a directing board composed of a president and six directors named for four-year terms by the executive with the consent of the Senate. The potential danger of selections for political reasons of inappropriate men by an executive and Senate dominated by the same political faction has not materialized, although it cannot be said that the selection of directors has been free of politics or of strong personal preferences.[16] The qualifications for membership of the board specified by law were: the candidate must not be a member of a similar private organization; not more than one director may be drawn from the same commercial organization; the candidate

[16] R. Ramela de Castro in *Entes autonomos* (Montevideo, 1923), p. 75, observes that: "In accordance with our custom of seeking public posts for the candidates rather than candidates for the posts we once had to lower to 30 years the age minimum for the presidency of the State Insurance Bank because the candidates had only reached that age. This presented no great difficulties, however, and a special law of December 29, 1911, attended to the matter."

must not be a member of the legislature; the president and vice-president must be natural citizens or have been naturalized citizens for at least seven years; at least two-thirds of the directors must be citizens and the balance need not even be naturalized citizens. The independence from legislative interference accorded to the board by law accounts for much of the success of the bank. By the original law the budget of the bank was prepared by the board and submitted to the executives for approval. The legislature's rôle was limited to an examination of the annual accounts by the Comision de Cuentas del Poder Legislativo. By the constitution of 1917 the Consejo Nacional was given power to name and discharge directors with the consent of the Senate, and to review the accounts rendered. The budget thenceforth was prepared by the board, submitted to the Consejo Nacional, and thence to the legislature for approval. The legislative examination aimed at a greater degree of democratic control, but fortunately for the bank there was no serious attempt to interfere with its autonomy.[17] It was the belief of many members of the legislature that administrative efficiency obtained by allowing the bank to carry out its policies freely was well worth the price of lesser democratic control. With the coming of the new government on March 31, 1933, and the centralization of power in a strong executive, the independence of the state industrial organizations has been greatly reduced. A representative of the executive, put into the Insurance Bank as interventor, succeeded in introducing politics into the conduct of its affairs, and the term "autonomy" as applied to the organization today is rather inappropriate.[18] It is not yet possible to judge what the effect of loss of independence will be on the general policies of the bank.

CONCLUSIONS

Financially, the State Insurance Bank has been a success, as evidenced by its profit record, although there are no data for com-

[17] By the law of July 19, 1926, a five-out-of-seven vote of the directors was thenceforth required for rate-fixing and rate increases.

[18] For the report of the committee that investigated this matter and for other comment on the work of the interventor see *Diario de sesiones de la Asamblea Deliberante*, II (1933), 197–213. As an economy measure the membership of the board was lowered from seven to three members.

parison with what private companies might have earned on a similar volume of business. As a revenue producer for the government it has not been especially prominent, considering the loss of tax revenue by exemptions. The consumer generally has not benefited in the matter of rates, although service has probably been as good as private companies would have furnished. A good market has been provided for government securities, although greater diversification of investments would have made the bank's position stronger during the current depression than that afforded by a portfolio limited to Uruguayan government bonds. The bank may have treated its employees somewhat better than the prevailing practice among private industries, and the superiority of its employees' performance to that of other government workers speaks well for the labor policy and the management. The bank has benefited from invariably good selection of men for the directorate and from laws that gave the directorate authority to operate relatively free from political pressure and from legislative interference.

Both the objections voiced at the founding of the bank and the arguments advanced in favor of it have been largely disproved. It is certain that the founders anticipated a greater willingness to serve the community and less insistence on protecting the profit record. However, the difficulty of establishing a line where consideration for the community must stop and consideration for the bank's soundness begin, and the ever present danger that politics may cause the service idea to be exaggerated, perhaps lends support to the conservative policy adopted by the bank. It may be that the bank has been too free from democratic control, too unresponsive to public opinion. Since there was no great need in 1911 for a change from private to public operation of the insurance business, such as might have been occasioned by practices of existing firms being decidedly contrary to the public interest, the mere fact that the bank has not imposed rates higher than private firms would have charged nor given inferior service seems an inadequate realization of the great social benefits originally anticipated from the monopoly.

SALES ANALYSIS FROM THE MANAGEMENT STANDPOINT—*Continued*

DONALD R. G. COWAN[24]

THESE expenses reflect the different physical effort necessary to sell in city and country. More city interviews may be made in the same time, and hence the expense per call is less. Although the country sales volume per interview is 128 per cent greater, the 78 per cent greater expense per interview reduces the intensity of market coverage, notwithstanding normally higher gross margins on products sold in the country. Consequently, in fourteen marketing areas studied, the per capita sales in rural sections are only 25 per cent of those in neighboring cities. Because of the variation in population density, race, nationality, occupation, income, competition, and other factors, the true diminishing-returns curve for a particular area cannot be obtained by averaging the per capita sales of groups of marketing areas having one, two, three, or more salesmen.

Management is guided by the experience gained through experiments in different territories. However, more exact measurement may be obtained by making different tests. First, analysis may be made of the results of changing the number of salesmen or the amounts of other varieties of selling effort in an area. The chief difficulty is to make these changes rapidly enough to prevent secular influences on business and other supposedly static conditions from invalidating the results obtained, and yet not so rapidly as to disrupt the local selling organization or seriously alter the attitude of the retail trade. Often, records of such changes are available for a period of years; but other important influences are apt to render unreliable the conclusions arising from this historical approach.

Second, areas may be chosen having general conditions as nearly alike as possible; and the result of having one, two, three, four,

[24] Chief statistician, Commercial Research Department, Swift & Co., Chicago.

or more salesmen in these respective areas may be compared. This method was applied in the preceding example and is the one by which executives commonly compare results in two or three similar areas. However, systematic comparison on a broad basis is unusual because of the difficulty of choosing many areas of approximate similarity.

Third, analytical methods may be employed to measure the separate effect of many variables and to hold them constant while revealing the results of variation in selling effort. The thoroughness with which this may be done determines how nearly the resulting curve may approximate true diminishing returns. In one example, the simple relationship of +0.6840 between sales and salesmen in 353 areas explains 47 per cent of the sales variation; but it would not serve as a dependable basis for a diminishing-returns curve until some allowance could be made for the factors accounting for all or a major part of the remaining 53 per cent.

An interesting illustration of this more extensive analysis is provided by the study upon which Chart III is based. The simple relationship between salesmen and sales is +0.7312, apparently explaining 53 per cent of the sales variation. The inclusion of four additional factors raised the total correlation to 0.8055 and the degree of sales variation explained to 65 per cent, but reduced the indicated separate effect of salesmen to only 22 per cent. Similarly, the apparent effect of advertising was reduced from 36 per cent to 23 per cent. Obviously, these effort factors must have been allocated to a considerable extent in proportion to regional sales possibilities. Although the allowances for the other included factors enable the derivation of an improved diminishing-returns curve from the dependence of sales upon salesmen, such a curve cannot be perfect because of other unmeasured factors, such as salesmen's ability. It is difficult, therefore, to determine precisely how far management may decide to intensify selling effort in different areas, and to what extent the sales rates of individual products may be affected in consequence.

The "worth-whileness" of an addition (or a reduction) of one salesman in any area depends not only upon the combination of many physical circumstances but also upon the monetary outgo

and income involved. Sometimes, for example, two good salesmen at a salary of $3,000 each may be more desirable than three ordinary salesmen at $2,500 each. The "profits curve," illustrated hypothetically in Table VI, assumes variable expense per hundred units and gross profit per hundred units to be the same in all cases, when, in reality, they may be affected by the intensification of effort and may in turn modify profits. More sales volume may be obtained by lower prices (and gross margins) in some areas than others, but exactly how much more depends on the different elasticities of demand. Auxiliary selling aids, such as advertising and dealer helps, delivery service, and the like, have their own tendencies to diminishing returns, which are modified by the complex conditions of each region.

The relative importance of the different product groups included in the total sales volume may be affected by the regional variation in selling effort as well as by other conditions. In a study comprising 353 selling areas, five factors explained 62 per cent ($R=0.7861$) of the varying proportions of product group A, 23 per cent ($R=0.4690$) of B, and 47 per cent ($R=0.6882$) of C. Assuming other factors constant, product groups A and B tend to be a smaller proportion of total sales volume where there are very few salesmen; but their relative importance is greater, and that of C is less, where more salesmen are employed.

These tendencies seem to indicate that diminishing returns from selling effort is greater for some types of products. They also suggest that, for various reasons, the selling of some products requires more time and effort. The sales manager must consider this in deciding to employ additional salesmen or to improve the general performance of his sales force on particular products.

It is apparent that variation in selling effort, represented by number of salesmen, is an important cause of regional variation in sales rates. The addition of salesmen, however, yields diminishing returns; but the marginal salesman cannot be determined without consideration of other variable expenses, gross margins, and resulting profits. Variation in number of salesmen affects the sales-rates of some products more than others. It suggests

that, for various reasons worth further discussion, the selling of some products may require more time and effort.

THE INFLUENCE OF ADVERTISING

Although advertising is a form of selling effort, there have been surprisingly few attempts to measure its direct effect on sales. Advertising agencies and others interested have made surveys to determine what magazines are received and read and what radio programs are heard in homes. But such studies merely establish

TABLE VIII

THE EFFECT OF VARYING NUMBERS OF SALESMEN ON PROPORTIONS OF PRODUCT GROUPS A, B, AND C IN TOTAL VOLUME

Salesmen per 1,000,000 People	Percentages of Total Volume		
	A	B	C
2	50.0	10.9	37.3
6	50.6	13.6	30.6
10	50.9	14.8	27.5
14	51.1	15.7	25.4
18	51.2	16.3	23.8
22	51.3	16.8	22.7
26	51.4	17.2	21.6
30	51.5	17.6	20.8

the fact that the advertising is or is not reaching its objective. They do not prove its effectiveness in increasing the consumption rates of the advertised products. The same is true of psychological and other copy tests, valuable as these may be in improving advertising. Sensing this, some investigators have attempted to measure how well a product's advertising is remembered. Since even this does not definitely establish its effect on sales, a still further step taken has been the study of what consumers have bought or intend to buy. When no relationship has been found between, say, the brands of food in pantries and the advertising reaching the homes, the marketing organization has sometimes been blamed for not making the product available at retail stores. This answer to the problem is not satisfactory, because retailers

usually hasten to put a product in stock when consumers ask for it. The final test of advertising is its effect on sales and resulting profits.

In numerous instances, phenomenal increases in sales have been imputed mainly to advertising. Just how much is due to changes in customers' habits, business cycles, and other secular factors is extremely difficult to measure.[25] It is suggested that the influence of advertising upon sales in different regions is more amenable to measurement and of more immediate practical importance in sales management.

Like the number of salesmen per 1,000 prospective customers, the amount of effort put forth by advertising usually varies in different sections of a firm's market, whether it be local, regional, or national in extent. The amount of newspaper, magazine, or broadcast advertising entering each sales area depends upon two things: (*a*) the number of times a particular product is advertised, and (*b*) the circulation of each medium used or the number of radio listeners in each area. The former is decided by the firm; while the latter depends upon many factors,[26] including how well each newspaper and magazine has been able to promote its circulation, how many radios have been sold, and the strength of different broadcasting stations. Of course, the amount of advertising entering each area may be controlled, particularly by choosing different publications or broadcasting stations, and more completely, in the case of local advertising, through the number of billboards, handbills, store cards, and the like.

There is ample evidence of the variation in regional amounts of advertising. The annual expenditure for nine well-known magazines ranges from $2.26 to $12.22 in 65 areas, while the *Saturday Evening Post* circulation varies from 0.4 to 16.3 copies,[27] radio sets per 100 families range from 10.6 in Mississippi counties to

[25] A. T. Falk, "Analyzing Advertising Results," *Harvard Business Review*, VII, Part I (January, 1929), 185–94; VII, Part II (April, 1929), 312–29.

[26] D. R. G. Cowan, "Regional Consumption and Sales Analysis," *Journal of Business of the University of Chicago*, VIII, No. 4 (October, 1935), 348.

[27] D. R. G. Cowan, *The Measurement of Advertising Effect* (Advertising Federation of America, Bureau of Research and Education, Educational Bull., 1930 Series, Nos. 2 and 3).

98.4 in New York counties,[28] and radio sets with National Broadcasting reception range from 0 to 98.4 per cent.[29] Local advertising may be nine times greater in some areas than others.[30] It is logical, therefore, that, if any chosen type of advertising affects sales, the effect should be greater in some areas than others, and, with extreme care, may be measured.

An interesting illustration of the method and its limitations is based on the association between Chevrolet registrations and the

TABLE IX

ASSOCIATION BETWEEN *Saturday Evening Post* CIRCULATION AND CHEVROLET REGISTRATIONS PER 1,000 PEOPLE
500 Counties (Selected at Random), 1927

COPIES OF *Saturday Evening Post* PER 1,000 PEOPLE	ESTIMATED CHEVROLET REGISTRATIONS PER 1,000 PEOPLE	WITH EACH SUCCESSIVE ADDITION OF 10 *Saturday Evening Post* PER 1,000 PEOPLE	
		Increase in Chevrolet Registrations	Percentage of Increase
0	6.0 (approx.)	.....	.....
10	13.5	7.5	125.0
20	25.0	11.5	85.2
30	35.5	10.5	42.0
40	44.0	8.5	23.9
50	51.0	7.0	15.9
60	57.0	6.0	11.8
70	61.0	4.0	7.0
80	65.0	4.0	6.6
90	69.0	4.0	6.2
100	72.0	3.0	4.3

circulation of the *Saturday Evening Post*,[31] which for many years has carried advertising of this automobile into all sections of the United States.

It appears that from county to county successive equal in-

[28] Total radios per 100 families, Columbia Broadcasting Co. estimate of radio ownership, January 1, 1935.

[29] National Broadcasting Co., *National Broadcasting Co. Network Areas.*

[30] See Chart III.

[31] D. R. G. Cowan, *The Measurement of Advertising Effect* (Advertising Federation of America, Bureau of Research and Education, Educational Bull., 1930 Series, Nos. 2 and 3), p. 3.

creases in the intensity of the advertising are accompanied by increases in registrations which at first tend to grow and then diminish in amount. This ultimate tendency to diminishing returns resembles that of salesmen and also that pertaining to psychological reaction from given stimuli.[32] Measuring the effect of advertising in this manner is an improvement over the survey method, because it is broadly based on the relationship existing between varying amounts of advertising and corresponding sales quantities in a great number of sales areas. Nevertheless, it is open to the same criticism. In making a survey, questionnaires are often sent to the subscribers of the magazines carrying the advertising; and the replies indicating use of, or interest in, the advertised goods are taken as an indication of the advertising's effectiveness. Sometimes, and very properly, the replies are compared with those obtained from non-subscribers. The difficulty is that, if the magazine circulates largely to a class of people, such as an income group, who would buy the commodity whether advertised or not, the advertising and the magazine will be given too much credit. Similarly, in our illustration, the fact that the purchasers of Chevrolet automobiles may also buy the *Saturday Evening Post* may give rise to some associated variations in both and thereby prevent the conclusion that the entire relationship is due to advertising effect.

Some advertisers are attempting to avoid this difficulty by choosing a few "test" areas so much alike in their characteristics that the effect of different amounts of advertising may be observed clearly. This method is universally used in agricultural experimentation where small plots of soil, exactly the same chemically, are sown with different amounts of the same seed or with the same amounts of seed mixed with varying amounts of lime or fertilizer. As many plots may be used as are necessary to make the results dependable. In advertising research, however, it is not possible to construct the "test" towns and cities with the same characteristics. At the same time, it is very difficult to choose enough sales areas of sufficient similarity to support scientific conclusions.

[32] J. P. Guilford, "Measuring Human Wants in Business," *American Economic Review*, September, 1929.

Probably this difficulty may be met by measuring, through correlation, the importance of the respective factors causing variation in an advertised product's sales. Included among these factors should be the per capita circulation of the magazines carrying the advertising. In applying the method to Chevrolet registrations, the combined circulation of the Curtis Publishing Company's magazines was used, along with other factors, because all of these publications carry Chevrolet advertising. Althogether, 86 per cent of the total variation was explained, including the influences credited to combined Curtis circulation and income-tax returns per 100 people amounting to 56 per cent and 9 per cent, respectively. Common to both factors was a joint or inseparable influence amounting to 8 per cent. Lest it be concluded that 48 per cent of the total variation in Chevrolet registrations is due to this advertising, a warning is necessary that the measurement is correct only within the limitations prescribed by the factors. In practice, it is of the utmost importance that all of the influences causing similar variations in the sales of the magazine and the product be held constant in both series before the remaining effect of the advertising upon sales is determined. If, for lack of data and other reasons, this part of the analysis is imperfectly done, a bias may remain in the measurement. In cases where both per capita sales and circulation are affected in the same direction by an influence which has not been held constant, advertising's effectiveness will be overvalued. On the other hand, if this influence affects the two series in an opposite manner and is not held constant, the advertising's effectiveness will be undervalued. It is quite probable that too much credit has been given to the advertising factor in this analysis. Even so, it is not a criticism of the method, but a warning to the unwary, careless, or inefficient user of it.

Another criticism is that Chevrolet registrations are not current sales but include all ages of that make in use. Probably, too, the magazine circulation varies closely with past circulation of the same magazine, as well as with the circulation of competitive media, and represents both the past and present flow of advertising into each area. Consequently, the relationship obtained is that of past and present advertising upon past and present sales.

Knowledge of such a relationship is of value to business management mainly from a long-range viewpoint.

This cumulative effect is minimized in finding the relationship of current sales of more perishable products to magazine circulation. It may not be entirely eliminated, because past advertising may, through habit, cause current sales to be higher than might otherwise be expected.

Among the various factors used in four such tests, the effects credited to advertising in the *Saturday Evening Post* were respectively 8 per cent out of a total of 74 per cent, 7 per cent out of 46 per cent, 2 per cent out of 54 per cent, and 6 per cent out of 39 per cent. The measured tendencies, after allowing for other influences in each study, are indicated in Table X. It should be noted that the total expenditures for advertising these products were only small fractions of that for Chevrolet. Also, the smaller effects may be partly due to the general dependence of convenience goods upon wide and intensive distribution in which salesmen may be relatively more effective than advertising.

Advertising may affect not only the physical volume of sales but the price per unit, when the latter is not predetermined or fixed on a uniform basis. Actual tests have proved that this relationship, as reflected in regional gross earnings per product-unit, does exist in some cases, even after allowances have been made for other known tendencies.

Assuming that both volume and gross profits per sales unit may be affected, Table XI illustrates how the full return from each degree of its intensification may be estimated by multiplying the volume at each stage by the corresponding gross earnings, and deducting the product of volume and gross earnings per hundred units in the stage of no advertising.

In attempting to determine up to what stage of intensity advertising is profitable, direct comparisons may be made between the advertising outlays and the gross earnings which tend to be produced. Unfortunately, in our example, the limited records do not permit an estimate of the expense per issue or of the number of magazine issues carrying the advertising. Moreover, some deductions would be necessary to cover other expenses incidental

to the handling of the increased sales volume brought about by the advertising. Such computations may be made more easily for

TABLE X

ASSOCIATION BETWEEN *Saturday Evening Post* AND SALES OF FOUR CONVENIENCE GOODS, A, B, C, AND D

Saturday Evening Post per 100 People	Sales per 100 People (Units)				With Each Successive Addition of One *Saturday Evening Post* per 100 Population							
					Sales Increase in Units per 100 People				Percentage of Sales Increase			
	A	B	C	D	A	B	C	D	A	B	C	D
0	310	8	150	95	.....	.....	.....	.....	.....	.....	.....	.....
1	468	17	210	140	158	9	60	45	51.0	112.5	40.0	47.4
2	526	23	260	153	58	6	50	13	12.4	35.3	23.8	9.3
3	561	27	300	162	35	4	40	9	6.6	17.4	15.4	5.9
4	586	30	330	169	25	3	30	7	4.5	11.1	10.0	4.3
5	607	33	350	174	21	3	20	5	3.6	10.0	6.1	3.0
6	626	35	360	178	19	2	10	4	3.1	6.1	2.8	2.3
7	643	37	367	182	17	2	7	4	2.7	5.7	1.9	2.2
8	658	38	372	185	15	1	5	3	2.3	2.7	1.4	1.6
9	672	39	377	188	14	1	5	3	2.1	2.6	1.3	1.6
10	685	40	379	190	13	1	2	2	1.9	2.5	.5	1.1

TABLE XI

COMBINED EFFECT OF ADVERTISING ON SALES VOLUME AND GROSS PROFIT

Saturday Evening Post per 100 People per Issue	Sales Volume per 100 People (Unit)	Gross Profit (Unit)	Total Gross Profit per 100 People	Advertising Effect per 100 People	Marginal Increase
0	3.10	0.56	1.74	.....	.....
1	4.68	.61	2.85	1.11	$1.11
2	5.26	.66	3.47	1.73	0.62
3	5.61	.71	3.98	2.24	.51
4	5.86	.75	4.40	2.66	.42
5	6.07	.79	4.80	3.06	.40
6	6.26	.83	5.20	3.46	.40
7	6.43	.87	5.59	3.85	.39
8	6.58	.90	5.92	4.18	.33
9	6.72	.93	6.25	4.51	.33
10	6.85	0.95	6.51	4.77	0.26

those forms of advertising which are applied in different areas in controllable quantities because costs are definitely known. From

the standpoint of advertising control in business, comparisons of this nature are very important.

In order to avoid the continuing effect of past advertising, regional relative changes in sales in a stated period may be studied. For one product, the increases for a year tended to be somewhat larger where its *Saturday Evening Post* advertising was dense, but wide variation from this tendency was evident. For another product, beneficial results from national advertising were not indicated. In both cases records for a longer period might have made the relationships clearer.

In the study of local advertising the danger of measuring the cumulative effect of past advertising will be largely avoided. The methods are similar. The influence of variation in the number of billboards, the amount of newspaper space, or the number of prize coupons distributed (all expressed on a per capita basis or its equivalent) upon either the per capita sales of the product advertised or the percentage increases in sales can be charted, measured approximately, or determined more exactly by correlation methods after allowing for other factors. The simplest method is usually sufficient for a test of the effectiveness of local advertising.

Some years ago a study was made of the effect of distributing coupons from door to door upon the sales of three products of general household use. A bearer of a coupon is entitled to a free sample when he or she buys another specified article from the local retailer. The consumer acceptance and sales of one product were previously well established, and the results of the couponing were not apparent except possibly in a few areas. The sales of the second product showed a measurable tendency to vary directly with its couponing in corresponding areas. The third product, new on the market, showed a decided sales response to the couponing. The percentage increases in their sales had similar tendencies.[33] It was observed, too, that relatively more coupons were redeemed by foreign-born classes in larger cities and that, in the

[33] D. R. G. Cowan, *The Measurement of Advertising Effect* (Advertising Federation of America, Bureau of Research and Education, Educational Bull., 1930 Series, Nos. 2 and 3), p. 9.

case of the new product only, the largest percentage increases took place where couponing was of longer duration.

In a study of billboard advertising, it was found that the sales increase per dollar-spent varied directly with the number of salesmen per 1,000 retail outlets, and inversely with the percentage illiterate, the competition of locally produced products, the present sales performance compared to market possibilities, and the total advertising expenditure per 1,000 people.[34] In another example, the sales of a product not previously advertised locally increased 8 per cent in areas where advertising was placed but decreased 5 per cent elsewhere. Results in areas receiving the advertising varied from a decrease of 15 per cent to an increase of 90 per cent. A study of the causes revealed that three market conditions tended to reduce the results; while two other market conditions, together with salesmen, two forms of local advertising, and the duration of the advertising campaign, tended to increase them. By combining the effect of the five market conditions and salesmen in each area, an index was obtained which indicated where this advertising might be placed more advantageously.

The point has already been developed[35] that the characteristics of the product play an important part in determining the consumption of different classes of people. So, too, these characteristics have a vital bearing upon the effectiveness of the product's advertising. If the product is wrong in form, package, color, quality, quantity, price, or other characteristics, the finest advertising copy may be rendered ineffective. If, after study of the problem, a change in the package increases the sales and profits, the new package should receive the credit. At the same time, if sales show a greater relative increase where there is more advertising than where there is less, advertising's effectiveness has also been increased.

Sales, and resulting profits, therefore, are the main—and perhaps the only true—criteria of advertising effect. From the standpoint of the advertiser, no other view may be taken. He adver-

[34] *Ibid.*

[35] D. R. G. Cowan, "Regional Consumption and Sales Analysis," *Journal of Business of the University of Chicago*, VIII, No. 4 (October, 1935), 351–57.

tises to increase his sales and profits; and if, in due course, they are not greater where more advertising is placed, allowing for other factors, there cannot be much relationship between them and his advertising.

The criticism is offered that advertising may be undertaken as a defensive measure and may serve this purpose effectively even when no sales increases are shown. The method of testing, however, is not open to criticism on this point. If sales are declining and the advertising is effective, the sales decreases, as illustrated in Table XII, will tend to vary inversely with the amounts of the

TABLE XII

EFFECT OF RADIO ADVERTISING ON SALES IN ONE SECTION OF THE UNITED STATES, 1935

Radios per 100 Families	No. of Areas	Total Sales (Units) for Comparable Periods		Percentage of Change in Sales during Period of Advertising
		Before Broadcasts	After Broadcasts	
61–70	25	405	313	−23
71–80	46	1,101	883	−20
81–90	120	3,467	2,921	−16
91–100	27	674	703	+ 4
Total	218	5,647	4,820	−15

advertising in different areas. On the other hand, when advertising is ineffective, areas having the most advertising will tend to have just as great sales decreases as areas where little or no advertising is applied. Thus, the effectiveness of advertising for both defensive and offensive purposes is indicated by the degree of relationship between different amounts of advertising effort and the corresponding sales results. The very remote possibility that the effect of advertising may be counterbalanced everywhere by proportionate expenditures of competitors' effort is of no practical consequence.

Several points of value in directing selling effort may be derived from this and previous discussions. First, in placing advertising, proper measurements of the potential market for each product

should first be obtained; and then the magazines, radio broadcasting stations, or other media giving the best coverage of sales possibilities should be chosen with proper regard to cost. In the areas where sales possibilities are favorable, especially in relation to current sales, advertising may be placed with beneficial results. In choosing the best advertising media to use, analysis of the factors affecting them should be helpful. For example, the *Country Gentleman* circulates to a greater extent in rural areas than the *Saturday Evening Post*[36] and would be preferable as a medium for advertising to rural communities. Many concerns are obtaining beneficial results from co-ordinating their advertising effort with the potential market.

Second, the sales of each magazine are unlikely to correspond perfectly to market potentialities for the product advertised in its pages, and the gaps may be filled in several ways. More salesmen may be used, the necessary number being determined in part from studies of the effect of more salesmen on sales. When this is not desirable, resort may be had to a carefully planned program of national and local advertising. It may be possible to choose other magazines, the sales of which are high in the areas where those of the media now used are low. However, it is difficult to find them so negatively intercorrelated in their regional circulation that no gaps remain in the matching of advertising effort with market potential; and, even when possible to do so, it may not be good policy to advertise a high-class product in certain low-grade magazines. Radio advertising meets this problem more successfully because of the flexibility of choosing certain broadcasting stations, systems, or networks of stations within each system. Local advertising is almost perfect in this respect because, like salesmen, its amount is under control and determinable in advance, whether it be newspapers, billboards, handbills, coupons, or some other form. The possibilities of placing local advertising effort where it will give the best results have been so attractive under some circumstances that effective national campaigns have made sole use of newspapers or billboards.

Third, advertising should be used as one element in setting at-

[36] D. R. G. Cowan, *ibid.*

tainable sales quotas, because the salesmen enjoying more of its aid should, in all fairness, be asked to produce better sales results. In doing so, of course, each kind of advertising should be kept separate, and its effect measured along with other factors. It thus happens that magazines and other media may be used in quota-setting, but only as simple reflectors of advertising effort and not as infallible indexes of market potentials.

Advertising, which consists of certain forms of selling-effort, affects the sales rates of different products to groups of consumers in different regions. Its application is subject to diminishing returns. The possibility of obtaining a knowledge and measurement of the factors influencing the return per unit of advertising effort is of great significance to business. Sales areas providing the more promising fields for these expenditures of effort may be chosen in advance, while those in which the conditions are least promising may be avoided. The gaps in national advertising may be filled where the probable return will be worth while. In addition, the advantage of being able to control the amount of local advertising done in each area suggests the possibility of national campaigns so organized that the amount placed in each area will be proportionate to the market potential.

THE CO-ORDINATION OF SELLING EFFORT WITH TRADE POSSIBILITIES[37]

Our discussions so far have treated the application of selling effort as though it consisted of varying numbers of salesmen or amounts of advertising. Of course, differences in selling expense for country and city were pointed out, and the co-ordination of different types of advertising was stressed. However, the directing of effort so as to improve sales rates consistent with profits is a more complicated matter because both salesmen and advertising may be broken down into more elementary units of effort which in turn may be matched with the needs of particular consumers, dealers, or other divisions of the market. Thus advertising consists of such elements as agate lines, title,

[37] The author wishes to recognize the collaboration of Mr. George E. Berg in making studies from which some facts used in this section are drawn.

body, and illustrations in individual advertisements, black and white or color, position in chosen newspapers or magazines or on particular pages, location of billboards as to travel, or of displays in the store, and so forth. These must be chosen with a view to improving sales rates and profits at a minimum of expense. Similarly, salesmen are not equal units of effort. The simplest illustration is that the personality of one may be attractive to some buyers and repulsive to others, and the importance of assigning each to the task to which he is best adapted is self-evident, yet often neglected. This raises the further point that comparatively few concerns have fully realized the importance of classifying and selecting customers and prospects so as to direct selling effort intelligently. In selling at wholesale, for example, the same salesman's calls on dealers Smith and Jones may yield a very different return, although the quality of effort, the time spent, and the disposition of both dealers to buy may be exactly the same.

Now a salesman's effort comprises certain elementary activities, such as traveling, waiting, interviewing, selling different products, arranging store displays, collecting, making reports, and the like. From a physical standpoint, these activities may be measured with a stop watch. Table XIII provides an example of the utilization of time by wholesale drug salesmen in city and country.[38]

A distinction is drawn between the writing of orders for goods requested by retail druggists and the attempted selling of products.

The greater time spent in travel on country routes and the consequent reduction in time devoted to order-taking and selling are at once apparent. From Table XIV the same tendency may be observed in the utilization of time by wholesale meat salesmen.

When salary, travel, and other expense rates per minute are applied, very enlightening deductions may be made by employers regarding the value of various activities. For instance, the amount paid a salesman for time spent in preparing reports required by the head office may suggest the desirability of retaining only the most essential of these reports.

Again, the amount or proportion of each salesman's time de-

[38] John R. Bromell, "What Becomes of a Salesman's Time," *Red Barrel* (Coca Cola Co., Atlanta, Ga.), June 15, 1933, pp. 19–22.

voted to selling various individual products may be related directly to the sales rates in different areas, as in Chart VI.

By comparing the time-expense with the gross profits from successively smaller increases in volume some indication may be obtained of how far it may be profitable to increase the time spent

TABLE XIII

WHOLESALE DRUG SALESMEN'S UTILIZATION OF TIME

	City (Per Cent)	Country (Per Cent)
Order-taking	17.5	15.8
Selling	28.6	21.4
Traveling	18.0	32.4
Visiting	17.3	15.5
Waiting	12.8	9.5
Interruptions	2.4	3.2
Other	3.4	2.2
Total	100.0	100.0

TABLE XIV

WHOLESALE MEAT SALESMEN'S UTILIZATION OF TIME

	City	Country
Miles per call	0.7	2.7
Minutes per mile	4.4	3.0
Travel minutes per call	3.6	7.2
Interview, minutes per call	9.4	11.2
Miscellaneous, minutes per call	5.2	8.2
Total, minutes per call	18.2	26.6

on each product. In this, of course, there may be a tendency for variation in a product's regional demand to be reflected in the time which sensible salesmen may devote to it.

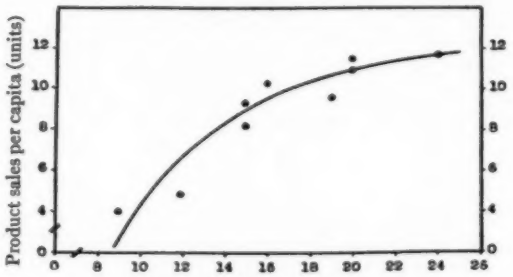
Salesmen's time studies may reveal the necessity for reorganization or consolidation of their routes when, for instance, the expense for travel time may seem quite out of proportion to business obtained during interview time. However, none except the most

superficial changes may be made without taking into consideration the fact that, all too frequently, the time spent in traveling and interviewing is nearly the same for each customer or prospect, regardless of his size or type.

There are numerous reasons why many firms continue, more or less vigorously, to pursue a policy of complete trade coverage. The centralized buying of chain-store systems has taken away some of the sales volume previously sold by regular salesmen and, to recoup this loss, these salesmen have intensified their efforts with the remaining independent retailers. For the same reason,

CHART VI

NET RELATIONSHIP BETWEEN ONE PRODUCT'S SALES PER CAPITA AND SELLING EFFORT



delivery and other services have been increased by competing firms. The mistaken belief that national advertising is distributed uniformly and that complete trade coverage is necessary for its support has led in some instances to the installation of expensive systems for insuring the solicitation of all retail trade regardless of size of retailer and consumer patronage. The view that while large retailers provide the outlet for volume the small trade yields the profits has caused disproportionate selling efforts to be overlooked. A contributing influence has been the fear that, after growing large, dealers may discriminate in their buying against firms which chose not to serve them while small.

In recent years the information gathered through various studies of distribution has disproven the assumption that, in general, retailers are equal units in the distributive system. Regarding volume of business done it was found in 1926 that the sales of 47 per cent of all the independent retail stores in eleven cities were only about 5 per cent of the annual sales volume of all such stores and that, on the other hand, a large proportion of the volume was concentrated with a very small percentage of retailers. The findings were similar for grocery, gasoline, clothing, hardware, drug, and many other classes of retailers.[39] The same tendencies were revealed by the Louisville grocery and drug surveys in 1929[40] and, on a national scale, by the United States Censuses of Distribution in 1929 and 1933.[41]

TABLE XV

NUMBER OF STORES AND SALES BY SIZE OF STORE
(CUMULATIVE PERCENTAGES)

ANNUAL VOLUME	1933		1929*	
	Stores	Sales	Stores	Sales
Less than $ 10,000....	64.36	13.85	43.66	5.69
Less than 20,000....	81.43	28.37	63.93	14.73
Less than 30,000....	88.55	38.78	75.17	23.28
Less than 40,000....	94.39	52.13	86.62	37.02
Less than 100,000....	98.04	67.09	94.97	54.83
Less than 200,000....	99.36	77.79	98.18	68.53
Less than 300,000....	99.66	82.12	99.02	74.89
Less than 500,000....	99.86	86.57	99.57	81.39
Less than 1,000,000....	99.95	90.31	99.86	87.66
All stores.....	100.00	100.00	100.00	100.00

* The changes in proportions between 1929 and 1933 are due mainly to the declining price level and business activity.

[39] Chamber of Commerce of the United States, Domestic Distribution Department, Washington, D.C., *Retail and Wholesale Trade of Eleven Cities*, May, 1928, pp. 66–118.

[40] *Louisville Grocery Survey*, Part I: "Census of Food Distribution" ("Distribution Cost Studies," No. 6), pp. 24–35.

[41] "Census of American Business, Retail Distribution, 1933," *Stores and Sales by Size of Business* (U.S. Department of Commerce) (mimeographed), p. 2.

[*To be continued*]